LABELLA Associates, D.P.C.
Engineering
Architecture
Environmental
Planning

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May 15, 2014

Ms. Amy Fisk
Niagara County Department of Economic Development
6311 Inducon Corporate Drive
Sanborn, New York 14132

RE: Final Phase I Environmental Site Assessment
Frontier Chemical Site
(Portion of) Unaddressed Parcel at Townline Road (SBL No. 164.00-3-36)
Town of Pendleton, New York
LaBella Project No. 214058

Dear Ms. Fisk:

Attached, please find two final copies and three pdf on CD of the report for the Environmental Site Assessment at the above referenced facility. Please note the following:

1. The Final Report includes available information received to date.
2. Please review the Report and contact us with any questions and comments you may have.

Feel free to contact us at your convenience at 716-551-6281.

Sincerely,

LABELLA ASSOCIATES, P.C.

Chris Kibler
Environmental Professional

CMK

Attachments

J:\NIAGARA COUNTY DEPT. OF ECONOMIC DEVELOPMENT\214058 - FRONTIER CHEMICAL - PHASE I, ESA\REPORTS\DRAFT PHASE I ESA FRONTIER CHEMICAL SITE.DOCX

LABELLA Associates, D.P.C.
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Phase I
Environmental Site Assessment

Location:

Frontier Chemical Site
(Portion of) Unaddressed Parcel at Townline Road
(SBL No. 164.00-3-36)
Pendleton, New York

Prepared for:

Ms. Amy Fisk
Niagara County Department of Economic Development
6311 Inducon Corporate Drive
Sanborn, New York 14132

LaBella Project No. 214058

May 2014

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LaBella Associates, D.P.C. (LaBella) has been contracted by the Niagara County Department of Economic Development (NCDED) to perform an All Appropriate Inquiry (AAI) Phase I Environmental Site Assessment (ESA) report at a portion of the Frontier Chemical Site, an unaddressed parcel at Townline Road (SBL No. 164.00-3-36), Town of Pendleton, Niagara County, New York, hereinafter referred to as the "Site". **Per the request of the NCDED, the approximately 11-acre landfill portion of the overall 71.4-acre parcel was not included as part of the Site for this Phase I ESA.**

The findings of this report are based upon a preliminary assessment of the condition of the Site within the Scope of Work and objective described below as of the date of our site observations and documentation review. This assessment was prepared according to the American Society for Testing and Materials (ASTM) Standard Practice E1527-05 to satisfy the due diligence requirements set for the NCDED. The information contained in this report is considered privileged and confidential and is intended solely for the use of the NCDED, as it applies to the Site.

1.0 EXECUTIVE SUMMARY

We have performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E 1527 for (a portion of) an unaddressed parcel at Townline Road (SBL No. 164.00-3-36), Town of Pendleton, Niagara County, New York, the Site. Any exceptions to, or deletions from, this practice are described in Section 2.5 of this report. Based on the results of this assessment, the following Recognized Environmental Condition (REC) has been identified in association with the Site at this time:

SECTION #3.4.4 – Current Use of the Adjoining Properties
And SECTION #5.5 - Historical Use Information on the Property and Adjoining Properties

A rail line (currently inactive) is located along the eastern Site boundary. Railroad ties are commonly treated with chemicals, such as creosote, to prevent the wood from decaying. In addition, railroad ballast often contains elevated concentrations of heavy metals. Because these contaminants have the potential to impact the soil and groundwater at the Site, the adjacent rail property to the east is considered an REC.

Based on the results of this assessment, apparent Historic Recognized Environmental Conditions have been identified with the Site:

SECTION #5.4 – Historical Site Operations

The lake located on the southwestern portion of the Site (Quarry Lake) was historically associated with the operations which were formerly conducted at the south adjoining property (now an 11-acre landfill). Recent groundwater and surface water testing at the Site (Fall 2013) has confirmed that the area of the lake is ready to be open to the public for unrestricted use. In addition, the south adjoining 11-acre landfill is currently the subject of an Operation, Maintenance and Monitoring Plan under the authority of the NYSDEC.

Based on the results of this assessment, no apparent de minimis conditions have been identified at the Site.

Due to the REC identified above, the performance of a limited Phase II ESA along the eastern property boundary is recommended. The Phase II ESA could include soil and groundwater characterization sampling for petroleum contamination, polychlorinated biphenyls, and metals.

2.0 INTRODUCTION

2.1 Purpose

This investigation was requested to identify, to the extent feasible, RECs in connection with the Site, including the identification of conditions indicative of releases and threatened releases of hazardous substances on, or in the vicinity of the Site. The AAI Phase I ESA report was conducted in general conformance with the Scope and Limitations of ASTM Standard Practice E1527-05.

The term, Recognized Environmental Condition, is defined by ASTM as the presence or likely presence of any hazardous substances [as currently defined by the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) including pollutants and contaminants], petroleum or petroleum products [excluded from the definition of hazardous substance and controlled substances; or the presence of petroleum products as defined by the Resource Conservation and Recovery Act (RCRA), the Oil Pollution Act of 1990, and the Clean Water Act (CWA)] at the Site under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures at the Site, or into the ground, groundwater or surface water of the Site.

The term is not intended to include "de minimis" conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of the appropriate regulatory agencies. Conditions determined to be de minimis are not RECs.

The term "data gap" means lack or inability to obtain information required by the standards and practices as defined in ASTM Standard Practice E1527-05 despite good faith efforts by the Environmental Professional.

The performance of ASTM Standard Practice E1527-05 is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs and the potential liability for contamination to be present in connection with the Site recognizing reasonable limits of time and cost. It is also intended to add protection from CERCLA liability for innocent landowner defense, bona fide prospective purchaser, contiguous property owners and grants who meet certain statutory requirements.

The objective of this AAI Phase I ESA was to determine, using our professional judgment, by means of the Scope of Work hereafter described:

1. A general description of the Site.
2. The current and historical usage of the Site and adjoining properties.
3. Whether RECs exist or have the potential to exist at the Site.
4. Whether site conditions suggest further evaluation based on the presence or probable presence of such RECs.
5. Information which may assist the client in evaluating the fair market value of the Site.

2.2 Subsurface Risks/Unanticipated Hazardous Materials

This work for this report has been performed in accordance with generally accepted environmental engineering practices for this region. The conclusion and recommendations of this report are based upon our opinion and judgment, and are dependent upon LaBella's knowledge, information supplied by the present owner and managers of the Site, and data and information solicited from governmental agencies. LaBella makes no other warranty or representation, either expressed or implied, nor is one intended to be included as part of its services, proposals, contracts, or reports.

In addition, LaBella cannot provide guarantees, certifications, or warranties that the property is or is not free of environmental impairment without a subsurface investigation involving drilling, vapor analysis, laboratory soil analysis, groundwater monitoring well installation, and laboratory groundwater analysis. Even with such a program, the data and samples from any given soil boring or monitoring well will indicate conditions that apply only at that particular location, and such conditions may not necessarily apply to the general Site as a whole.

2.3 Scope of Work

The major components of an AAI Phase I ESA report include a visual inspection of the Site and adjoining properties; interviews and review of documents from past and present owners, occupants, managers, representatives and neighbors to the extent necessary; interviews with tribal and local government agency representatives; review of tribal, local and state records relative to the Site; and a review of tribal, local, state and federal standard environmental record sources relative to the Site. The findings and conclusions presented in this report are based on information gathered and limitations set forth in this report.

The Scope of Work performed in this assessment is limited to the areas described as follows:

1. Interview with the Site Representative, Ms. Amy Fisk, to evaluate the Site for the potential for environmental contamination to be present at the Site. For purposes of this report, the NCDED has designated Ms. Fisk as the appropriate contact to provide user information for this assessment.

2. Interviews with and/or record reviews of each of the following to obtain information directly regarding environmental concerns at or in the immediate vicinity of the Site, which is available directly by file or through general knowledge of the individual being interviewed. Information sources include:
    a. United States Environmental Protection Agency (USEPA)
    b. New York State Department of Environmental Conservation (NYSDEC), Region 9; Division of Solid and Hazardous Waste, Division of Water, Legal Division
    c. Niagara County Health Department
    d. Niagara County Refuse Disposal District
    e. Town of Pendleton Municipal Offices

3. Review of the following federal, state and local environmental records and databases to aid in the identification of conditions at or related to the Site and property, adjacent to or in the immediate vicinity of the Site, including:
    a. USEPA National Priority List (NPL) – 1.0 mile
    b. USEPA Delisted NPL – 0.5 mile
    c. USEPA Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) and Archived (No Further Remedial Action Planned – NFRAP) CERCLIS Sites – 0.5 mile
    d. USEPA Resource Conservation and Recovery Act (RCRA) Corrective Action Sties (CORRACTS) Treatment, Storage, and Disposal Facility Listing (TSD) – 1.0 mile
    e. USEPA RCRA non-CORRACTS TSD – 0.5 mile
    f. USEPA RCRA Large and Small Quantity Generator Listing – Site and adjoining properties

g. National Response Center Emergency Response and Notification System Listing (ERNS) – Site only
h. Federal, state and local Institutional Controls/Engineering Controls and Land Use Restrictions - Site only
i. NYSDEC Registry of Inactive Hazardous Waste Disposal Sites (IHWDS) (state equivalent of NPL Sites) – 1.0 mile
j. NYSDEC Registry of Brownfield Cleanup Program Sites (BCP) and Voluntary Cleanup Program Sites (VCP) – 0.5 miles
k. NYSDEC Hazardous Substance Waste Disposal Site Inventory (state equivalent of CERCLIS Sites) – 0.5 mile
l. NYSDEC Part 360 Permitted Solid Waste Disposal Facilities – 0.5 mile
m. Local Inventory of Waste Disposal Sites – 0.5 mile
n. NYSDEC Listing of Registered Petroleum Bulk Storage Facilities (PBS), Chemical Bulk Storage Facilities (CBS) and Major Oil Storage Facilities (MOSF) – Site and adjoining properties
o. NYSDEC Listing of Active Spills and Leaking Storage Tanks – 0.5 miles
p. United States Geological Survey (USGS) Topographic Quadrangle Map Pendleton, New York
q. United States Department of Agriculture (USDA) Niagara County Soil Survey obtained from the Natural Resource Conservation Service (NRCS) website
r. Aerial photographs of the area
s. Local plat maps
t. Remedial Investigation Report prepared by URS Consultants, Inc. dated June 1991
u. Record of Decision prepared by the NYSDEC dated March 1992
v. Construction Photographs (1995-1996)
w. Quarry Lake Dewatering Sediment Removal Collection System Photographs
x. Engineering Certification Report prepared by O'Brien & Gere Engineers, Inc. and Glynn Geotechnical Engineering dated March 1997
y. Post Closure Operation, Maintenance and Monitoring Activities Annual Report prepared by the Olin Corporation dated August 25, 2009
z. Quarry Lake Sediment Study prepared by the NYSDEC dated September 2013

4. Site visit on Thursday, December 19, 2013, by Mr. Dan Riker of LaBella to photograph the Site and to visually identify areas of concern as defined in the agreement.

5. Completion of LaBella's AAI Phase I ESA Site Reconnaissance Report.

2.4 Significant Assumptions

As a result of the unavailability of information, the following assumption was made in order to complete the Scope of Work:

- Groundwater flow direction in the vicinity of the Site was estimated based on review of area topographic maps. Determination of site-specific groundwater flow direction typically requires installing at least three groundwater monitoring wells, surveying the wells, and collecting groundwater elevation data (refer to Section 3.2).

2.5 Limitations and Exceptions of Assessment

ASTM Standard Practice E1527-05 expressly recognized the fact that no ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. LaBella's work is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs in connection with the Site, and its Scope of Work reflects a recognition of the reasonable limits of time and cost.

The work for this report has been performed in accordance with generally accepted environmental engineering practices for this region. The conclusion and recommendations of this report are based upon LaBella's opinion and judgment, and are necessarily dependent on information supplied by the individuals, entities, and agencies described in Section 2.3. LaBella makes no other warranty or representation, either expressed or implied, nor is one intended to be included as part of its services, proposals, contracts, or reports.

The actual presence of radon, lead-based paint, lead in drinking water, mold-related issues, electromagnetic frequencies, asbestos-containing building materials (ACBM), wetlands, cultural and historic resources, ecological resources, and endangered species are not included in the Scope of Work of this assessment. Additionally, regulatory compliance, industrial hygiene, health and safety, and indoor air quality are not included in the Scope of Work of this assessment.

It is further noted that due to post 9/11 terrorist related concerns, the NYSDEC has limited the availability of petroleum bulk storage, chemical bulk storage, and major oil storage facility details, and detailed spill information to the public. However, LaBella does have access to the addresses of current PBS, CBS, and MOSF locations accessed from the database from the NYSDEC website. In addition, this information can usually be acquired by a FOIL to the regulating agency to attempt to obtain this relevant and reasonably ascertainable environmental information for AAI Phase I ESA reports. If this information is not obtainable then it will be discussed as a data gap in Section 8.2.1.

The site visit was limited to visual observations within the perimeter of the property and other accessible areas only. Visual observations were limited at the time of the site visit due to size, snow cover and vegetative growth.

2.6 Special Terms and Conditions

The NCDED and LaBella have agreed that the Scope of Work described in Section 2.3, and the Limitations and Exceptions described in Section 2.5 above, are acceptable to you and that to the fullest extent permitted by law, LaBella shall not be liable to you for limiting its investigation to the Scope of Work described. Based on the engagement and Scope of Work agreed upon, our evaluation of the Site is as presented herein.

2.7 User Reliance

The NCDED may rely upon the findings of this report and should be aware of the agreed upon Scope of Work and the limitations associated with this Scope of Work.

3.0 SITE DESCRIPTION

The approximately 60.4-acre Site is currently undeveloped consisting mainly of wooded/fallow land including a lake (Quarry Lake) on the southwestern portion of the Site and a small pond immediately to the northeast of Quarry Lake. Adjoining/adjacent property uses included the following: north-wooded land and residential, south-residential and an 11-acre landfill, east-agricultural and wooded land, residential and an inactive railroad, and west-wooded land and residential.

3.1 Site Location and Legal Description

The Site is addressed as (a portion of) an unaddressed parcel at Townline Road (SBL No. 164.00-3-36), Town of Pendleton, Niagara County, New York and is comprised of one tax parcel. Property boundaries for the purpose of this assessment were obtained from the Landmax Data Systems, Inc. website. **Per the request of the NCDED, the approximately 11-acre landfill portion of the overall 71.4-acre parcel is not to be included as part of the Site for this Phase I ESA.** A map depicting the tax parcel that comprises the Site is located in the Figures and Photographs Appendix of this report. This information is outlined in the table below.

	Tax Account Number	Property Use Code	Acreage
Tax Parcel #1	164.00-3-36	330 (Commercial Vacant)	71.4

3.2 Site and Vicinity Characteristics

The Site is located within a rural area. An 11-acre landfill is located southeast adjoining to the Site; refer to Section 5.4 below for further details pertaining to the landfill and its association with the Site. According to the 7.5-minute Pendleton New York quadrangle USGS Map, the Site consists of slightly sloping land to the north. The USGS map indicates that a lake is located at the Site (Quarry Lake). Based on interpretation of the USGS topographic map, groundwater flow at the Site appears to be to the north. According to information obtained from the Natural Resource Conservation Service (NRCS) website, soils at the Site consist mainly of the following:

- Lakemont silty clay loam: Reddish clayey and silty glaciolacustrine deposits; poorly drained
- Odessa silty clay loam (0-2% slopes): Reddish clayey and silty glaciolacustrine deposits; somewhat poorly drained

3.3 Present Ownership and Use

The Site is currently owned by Frontier Chemical. The Site is an unoccupied former industrial waste treatment facility. The Site has reportedly been unoccupied since the mid to late 1970s.

3.4 Site Improvements

3.4.1 Structures and Improvements

The Site is currently undeveloped land.

3.4.2 Roads

The Site is bordered to the west by Townline Road.

3.4.3 Current Site Utilities

The Site is currently undeveloped land. Municipal water is currently available for connection to the Site.

3.4.4 Current Use of the Adjoining Properties

The Site is bordered by the following properties.

Direction	Occupant
North	Wooded land and residential
East (and beyond Beach Ridge Road)	Agricultural and wooded land, residential and an inactive railroad
South	Residential and an 11-acre landfill
West beyond Townline Road	Wooded land and residential

An inactive rail line is located along the eastern Site boundary. Railroad ties are commonly treated with chemicals, such as creosote, to prevent the wood from decaying, railroad ballast often contains elevated concentrations of heavy metals, and locomotives once used polychlorinated biphenyls (PCBs). Because these contaminants have the potential to impact the soil and groundwater at the Site, the adjacent rail property to the east is considered an REC.

Property boundaries for the purpose of this assessment were obtained from the Landmax Data Systems, Inc. website, and were visually estimated at the time of the site visit.

4.0 USER PROVIDED INFORMATION

In accordance with the ASTM E1527-05, a "User" is defined as the party seeking to complete an environmental site assessment of the property. If the user is aware of any specialized knowledge or experience that is material to RECs in connection with the property, it is the user's responsibility to communicate any information based on such specialized knowledge or experience to the environmental professional. The User Questionnaire was completed by Ms. Amy Fisk. For purposes of this report, the NCDED has designated Ms. Fisk as the appropriate contact to provide user information for this assessment. A copy of the User Questionnaire is included in Appendix 7.

4.1 Title Records

According to the ASTM Standard Practice E1527-05, "the user should either engage a title company or title professional to undertake a review of reasonably ascertainable land title records and lien records for environmental liens or activity and use limitations currently recorded against or relating to the property or to negotiate such an engagement of a title company or title professional as an addition to the Scope of Work to be performed by the Environmental Professional."

ASTM Standard Practice E1527-05 User Questionnaire Question	Reported by User
Are land title records available for review?	The User reported land title records are not available for review.

4.2 Environmental Liens or Activity and Use Limitations

ASTM Standard Practice E1527-05 User Questionnaire Question	Reported by User
Is the User aware of any environmental cleanup liens against the *property* that are filed or recorded under federal law?	*The User did not report environmental liens currently recorded against or relating to the property. In addition, the User did not report any activity or use limitations currently recorded against or relating to the property.
Is the User aware of any AULs, such as engineering controls, land use restriction, or institutional controls that are in place at the Site and/or have been filed or recorded in a registry under federal, tribal, state, or local law?	*The User is not aware of any AULs, such as engineering controls, land use restriction, or institutional controls that are in place at the Site and/or have been filed or recorded in a registry under federal, tribal, state, or local law.

*An EDR Environmental LienSearch Report was conducted by EDR, Inc. and no Environmental Liens and/or Activity and Use Limitations were identified.

4.3 Specialized Knowledge

ASTM Standard Practice E1527-05 User Questionnaire Question	Reported by User
Does the *User* of this *ESA* have any specialized knowledge or experiences related to the *property* or nearby properties? For example, is the User involved in the same line of business as the current or former *occupants* of the *property* or an adjoining *property* so that the User would have specialized knowledge of the chemicals and processes used by this type of business?	The User does not have any specialized knowledge or experiences related to the property or nearby properties.

4.4 Commonly Known or Reasonably Ascertainable Information

ASTM Standard Practice E1527-05 User Questionnaire Question	Reported by User
Is the User aware of commonly known or reasonably ascertainable information about the *property* that would help to identify conditions indicative of releases or threatened releases including: past use of the Site, specific chemicals currently or previously utilized, spills or chemical releases, or environmental cleanups regarding the Site?	The User indicated that the Site was historically operated by Frontier Chemical Waste Processing and that the NYSDEC has extensive files related to the Site and historical operations.
Based on the User's knowledge and experiences related to the *property,* is the *User* of this *ESA* aware of *obvious* indicators that point to the presence or likely presence of contamination at the *property?*	Based on the User's knowledge and experiences related to the Site, the User of this ESA is not aware of obvious indicators that point to the presence or likely presence of contamination at the Site.

4.5 Valuation Reduction for Environmental Issues

ASTM Standard Practice E1527-05 User Questionnaire Question	Reported by User
Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property?*	The User reported that there is currently no transfer of ownership.

4.6 Reason for Performing Phase I ESA

According to ASTM 1527-05, either the User shall make known to the environmental professional the reason why the User wants to have the Phase I ESA preformed or, if the User does not identify the purpose of the Phase I ESA, the environmental professional shall assume the purpose is to qualify for the Landowner Liability Protections under the Brownfields Amendments. The User reported the Phase I ESA was performed in order to determine if any environmental conditions exist at the Site prior to Niagara County involuntarily acquiring the Site via tax foreclosure.

5.0 STANDARD ENVIRONMENTAL RECORD SOURCES – FEDERAL AND STATE

Federal, state and local environmental records were reviewed as a part of this assessment, in accordance with ASTM 1527-05 standard. Listings identified within the standard search radius outlined in ASTM 1527-05 are detailed in their respective sections below. Each listing identified was reviewed by LaBella and evaluated. Copies of the regulatory records documentation are included in Appendix 1.

5.1 Site Listings

No regulatory listings were identified associated with the Site. **Per the request of the NCDED, the approximately 11-acre landfill portion of the overall 71.4-acre parcel is not to be included as part of the Site for this Phase I ESA.** Refer to Section 5.2 below regarding the southeast adjoining IHWDS listing pertaining to the 11-acre landfill plot.

5.2 Adjoining Property Listings

Adjoining Southeast – Frontier Chemical

One regulatory listing was identified associated with the southeast adjoining property, addressed as Townline Road, North Tonawanda, New York. A copy of the listing is included in Appendix 1. The property is currently occupied by an 11-acre landfill. The apparent flow of groundwater at the property appears to be to the north and towards the Site.

The property was identified as a NYSDEC listed Inactive Hazardous Waste Disposal Site (IHWDS). This property is currently listed as a Class 4 site (this classification is assigned to a property that has been properly closed but that requires continued site management consisting of operation, maintenance and/or monitoring). Refer to Section 5.4 below for further details regarding this listing.

Based on the ongoing monitoring of the property, there are no apparent RECs associated with the southeast adjoining property at this time. In addition, as indicated below in Section 5.4, recent testing of Quarry Lake has indicated that such is practical for unrestricted public use at this time.

5.3 ASTM Standard Regulatory Database Listings

5.3.1 USEPA National Priority List (last updated October 31, 2013)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	1.0 mile	No listings	No listings

5.3.2 USEPA Delisted National Priority List (last updated November 21, 2013)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	0.50 mile	No listings	No listings

5.3.3 USEPA CERCLIS (last updated November 21, 2013)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	0.50 mile	No listings	No listings

5.3.4 USEPA CERCLIS NFRAP (last updated November 21, 2013)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	0.50 mile	No listings	No listings

5.3.5 USEPA RCRA CORRACTS (last updated November 15, 2013)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	1.0 mile	No listings	No listings

5.3.6 RCRA Treatment, Storage, and Disposal Facilities – non-CORRACTS (last updated November 15, 2013)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	0.50 mile	No listings	No listings

5.3.7 USEPA RCRA Generators (last updated November 15, 2013)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # - SQG/LQG (Address)
0	Site and Adjoining Properties	No listings	No listings

5.3.8 National Response Center ERNS (last updated November 22, 2013)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	Site only	No listings	No listings

5.3.9 Federal Listed Sites with Institutional and/or Engineering Controls (last updated January 25, 2007)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	Site only	No listings	No listings

5.3.10 State Listed Facilities with Institutional and/or Engineering Controls (updated bi-weekly)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – State Identification # (Address)
0	Site only	No listings	No listings

5.3.11 State Listed Inactive Hazardous Waste Disposal Facilities (updated bi-weekly)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – State Identification # (Address)
0	1.0 mile	No listings	No listings

5.3.12 State Listed Voluntary Cleanup Program Facilities (updated bi-weekly)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	0.50 mile	No listings	No listings

5.3.13 State Listed Brownfield Cleanup Program Facilities (updated bi-weekly)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
0	0.50 mile	No listings	No listings

5.3.14 State Listed Hazardous Substance Disposal Facilities (last updated 1998)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification # (Address)
1	0.50 mile	1	Refer to Section 5.2 above.

5.3.15 State Listed Part 360 Solid Waste Disposal Facilities (last updated February 2006)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Federal Identification #
0	0.50 mile	No listings	No listings

5.3.16 Local Inventory of Solid Waste Disposal Locations (provided by the Niagara County Refuse Disposal District-November 25, 2013)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name – Niagara County Identification # (Address)
0	0.50 mile	No listings	No listings

5.3.17 NYSDEC Major Oil Storage Facilities (updated nightly)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name: Address – MOS Identification #
0	Site and adjoining properties only	No listings	No listings

5.3.18 NYSDEC Chemical Bulk Storage Facilities (updated nightly)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name: Address – CBS Identification #
0	Site and adjoining properties only	No listings	No listings

5.3.19 NYSDEC Petroleum Bulk Storage Facilities (updated nightly)

Listing Summary

Number of Listed Sites	Search Radius	Reference Number	Facility Name: Address – PBS Identification #
0	Site and adjoining properties only	No listings	No listings

5.3.20 NYSDEC Active and Closed/Inactive Spill Listings (updated bi-weekly)

Listing Summary

Number of Listed Sites	Search Radius	Listing Number	Facility Name: Address – Spill # (status)
0 active 0 closed/inactive	Active listings: 0.50 mile Closed/inactive listings: Site and adjoining properties only	No listings	No listings

5.3.21 Assessment of the Potential for Soil Vapor Intrusion

Vapor intrusion is the entry of volatile organic compounds (VOCs) to indoor air from underlying contamination in soil and groundwater. Based on the findings of this report, the southeast adjoining property was historically utilized for the treatment of industrial wastes (including petroleum and solvent-related wastes). There are currently no buildings located at the Site. In addition, no information was obtained suggesting the presence of a soil vapor intrusion concern at the Site at this time. However, should subsurface impact be encountered in the future, the potential for soil vapor intrusion should be evaluated at that time.

5.4 Additional Environmental Record Sources

5.4.1 Review of Previous Environmental Reports

LaBella reviewed the following environmental reports. Copies of the reports are included in Appendix 8.

- Remedial Investigation Report prepared by URS Consultants, Inc. dated June 1991
- Record of Decision prepared by the NYSDEC dated March 1992
- Construction Photographs (1995-1996)
- Quarry Lake Dewatering Sediment Removal Collection System Photographs
- Engineering Certification Report prepared by O'Brien & Gere Engineers, Inc. and Glynn Geotechnical Engineering dated March 1997
- Post Closure Operation, Maintenance and Monitoring Activities Annual Report prepared by the Olin Corporation dated August 25, 2009
- Quarry Lake Sediment Study prepared by the NYSDEC dated September 2013

Summary Review of Previous Environmental Reports

Based upon review of the previous studies, the area immediately southeast adjoining to the Site (now the landfill) was historically utilized for the treatment of industrial wastes (plating wastes, pickle liquors and other liquid acid wastes from plating and metal finishing industries) from at least 1959 through 1974. The earliest industrial-type operations identified for this property appeared to be clay brick and tile manufacturing as of at least the late 1930s. During these operations, wastes were discharged into Quarry Lake located at the Site. Once waste treatment operations ceased at the southeast adjoining property, a majority of the area was filled and graded.

Remedial actions were initiated at the adjacent site in the 1980s. In 1984 and 1985, more than 50 drums of pyridine were excavated and removed from the southeast adjoining property. The NYSDEC issued Consent Orders in 1984, 1986 and 1988 requiring the Responsible Party (RP) (Frontier Chemical) to remediate Quarry Lake. Recommended measures included draining and excavating the contaminated sediment from the Lake and relocating such to a containment area somewhere at the Site (ultimately the southeast adjoining landfill). Additionally, it was mandated that the RP investigate the area immediately southeast of Quarry Lake where waste treatment operations were formerly conducted. Such an investigation included the installation of 12 groundwater monitoring wells in this area by Frontier Chemical in 1988. Ultimately however, the RP did not complete all of the necessary measures set forth in the Consent Orders and was found in violation of such.

As a result of Frontier Chemical's lack of ability to complete the investigation as prescribed, the NYSDEC took over in 1991. Based upon the results of their investigation it was determined that heavy metals were located in the bottom sediments of Quarry Lake and that the fill/graded area southeast adjoining to Quarry Lake was contaminated with organics, and heavy metals.

In 1992, the NYSDEC issued a Record of Decision (ROD) on the Site and the southeast adjoining property. Thereafter in March 1994, an Order of Consent issued by the NYSDEC was entered into by the RPs in order to conduct a Remedial Design/Remedial Action Work Plan (RD/RAWP) for the Site and southeast adjoining property. The RD/RAWP included removal of all contaminated Quarry Lake sediment and placement into a newly-constructed landfill proximate the Site. Design of the landfill was completed in 1993 and 1994 and construction of such was finished in 1995and 1996 by Sevenson Environmental Services, Inc. Once construction of the landfill was completed on the southeast adjoining property, Operation, Maintenance and Monitoring activities began in 1997.

In spring of 1997, the Site and southeast adjoining landfill property were reclassified by the NYSDEC from a Class 2 property to a Class 4 property (property is properly closed but requires continued management consisting of operation, maintenance and/or monitoring). During the reclassification, the boundaries of the regulatory listing were reestablished to include only Quarry Lake and the landfill area southeast adjoining to such totaling approximately 22 acres in size (as indicated above, Quarry Lake is included as part of the Site for this Phase I ESA and the landfill is considered to be the southeast adjoining property). It should be noted that while continued operation, maintenance and monitoring is being conducted at the southeast adjoining, fenced-in landfill, these specific measures are not being conducted at Quarry Lake.

In summer/fall 2013 the NYSDEC conducted supplemental sediment sampling from Quarry Lake in an effort to reestablish the lake for unrestricted public use through the Town of Pendleton and/or Niagara County. This investigation included the sampling of five separate points including two deep-lake sampling locations and three along the southeast portion of the lake proximate the landfill. These sampling locations were chosen to assess if any contaminants were leaching from the landfill into Quarry Lake and, where sediment accumulation would be expected within the lake (central, deep areas). Based upon results of this investigation, only trace amounts of contaminated sediment were identified within the lake. As a result, the NYSDEC indicated that it would be practical for the Town of Pendleton and/or Niagara County to reestablish Quarry Lake for unrestricted public use. Lastly, a letter was submitted by the NYSDEC on October 23, 2013, to recertify the boundaries of the IHWDS listing to include only the 11-acre landfill portion of the Site.

5.4.2 Other Records

No other records were reviewed pertaining to the Site as part of this Phase I ESA.

5.5 Historical Use Information on the Property and Adjoining Properties

LaBella attempted to review reasonably ascertainable and readily available standard sources of historical information as defined by the ASTM Standard Practice E1527-05 in order to identify all obvious usages of the Site back to the first developed use or 1940, whichever is earlier (i.e., the historical research objective according to ASTM). Uses of the properties adjoining the Site are identified in this report only to the extent that this information is revealed in the course of researching the Site itself and were determined at the discretion of the Environmental Analyst. As such, LaBella reviewed only as many of these sources as necessary to achieve the historical research objective. It should be noted that that the lack of availability of reasonably ascertainable and readily available standard ASTM required sources has the potential to affect the findings of this assessment and can impact the ability of the Environmental Professional or Analyst to identify recognized environmental conditions and may result in a data failure (defined in Section 8.2.1 of this report). A data failure may represent a significant data gap. Data failures and data gaps are identified, defined, and evaluated for their significance in Section 8.2 of this report.

Standard historical sources LaBella attempted to review are outlined in the table below.

Section	Historical Source	Date(s)	Source/Comments
5.5.1	Sanborn Fire Insurance Maps	Not Available	EDR, Inc. Sanborn Map coverage does not appear to include the Site and surrounding area.
5.5.2	Aerial Photographs	1951, 1958, 1966, 1972, 1990 and 2012	Niagara County Natural Resource and Conservation Service (NRCS)
5.5.3	Property Tax Files	Not Applicable	Town of Pendleton Municipal Offices
5.5.4	Recorded Land Title Records	Not Available	Not available for review. Not provided to LaBella for review. Usages of the Site were obtained through the review of other sources.
5.5.5	Historical Plat Maps	1875 and 1908	Buffalo Erie County Public Library
5.5.6	Local Street Directories	Not Available	Buffalo Erie County Public Library Street directories do not appear to include the Site and surrounding area.
5.5.7	Building Department Records	Not Applicable	Town of Pendleton Municipal Offices

5.5.1 Sanborn Fire Insurance Maps

Sanborn Fire Insurance maps do not appear to provide coverage of the Site and surrounding properties. As such, Sanborn Fire Insurance maps were not reviewed as part of this Phase I ESA.

As the historical usage of the Site since first developed use was obtained from other historical sources, the lack of the review of these maps does not appear to be significant.

A copy of the "No Coverage" letter obtained from Environmental Data Resources is included in Appendix 3.

5.5.2 Aerial Photography

The table below outlines observations obtained from the review of aerial photographs.

Date	Observations
1951 and 1958	Site: Wooded/Fallow land and Quarry Lake North: Agricultural land South: Residential and industrial East: Rail and agricultural land West: Agricultural land
1966, 1972 and 1990	Site: Site: Fallow/wooded land and Quarry Lake North: Residential and agricultural land South: Residential and industrial East: Rail, residential and agricultural land West: Residential and agricultural land
2012	Site: Fallow/wooded land and Quarry Lake North: Residential and agricultural land South: Residential and a landfill East: Rail, residential and agricultural land West: Residential and agricultural land

Copies of the aerial photographs are included in Appendix 3.

5.5.3 Property Tax files

A FOIL request was submitted to the Town of Pendleton Clerk's Office on November 25, 2013. A copy of the FOIL request is included in Appendix 6. On November 26, 2013, LaBella reviewed files at the Town of Pendleton municipal offices. The following information was identified:

- Assessment Office
  - SBL Number: 164.00-3-36
  - Property Size: 71.4 acres
  - Current Owner: Frontier Chemical
  - Current Use: Quarry Lake and wooded land (including an 11-acre landfill)
  - Prior Use: Quarry Lake and wooded land (including an industrial waste processing facility)
  - All public utilities are available for connection.
- No files of environmental concern were identified at the Building Department
- Several files were reviewed at the Clerk's Office pertaining to the history of the Site and previous environmental investigations that have been conducted at the Site. Refer to Section 5.4 above for details pertaining to these files.

In addition, limited assessment information was obtained from the Landmax Data Systems, Inc. website. This information is outlined in Sections 3.1 and 3.4.1. Copies of these records are included in Appendix 6.

5.5.4 Recorded Land Title Records

According to the NCDED, title records were not reasonably ascertainable as part of the Scope of Work of this assessment, and as such, were not provided and reviewed as part of this Phase I ESA report. Refer to Section 4.1 for additional details.
As the historical usage of the Site since first developed use was obtained from other historical sources, the lack of the review of the land title records does not appear to be significant.

5.5.5 Historical Plat Maps

The table below outlines observations obtained from the review of available historical plat maps for the Site.

Date	Observations
1875	Site and surrounding areas appear to be undeveloped with residential development south and west of the Site; railroad tracks also run along the eastern Site boundary
1908	Site and surrounding areas appear to be undeveloped with residential development south and west of the Site (including a church and school); railroad tracks also run along the eastern Site boundary

Copies of the plat maps are included in Appendix 2.

5.5.6 Local Street Directories

Street directories were not available for review at the Buffalo Erie County Public Library. As the historical usage of the Site first developed use was obtained from other historical sources, the lack of the review of these directories does not appear to be significant.

5.5.7 Building Department Records

Refer to Section 5.5.3 above for details.

5.5.8 Summary of Historical Information

Based on the review of readily available historical information (including information reviewed in Section 5.4 above), it appears that a majority of the Site has always included undeveloped (wooded/fallow) land (northern and central portions of the Site). In addition, it appears as though Quarry Lake was developed on the southern portion of the Site sometime between the late 1930s and early 1950s. Historically, Quarry Lake was utilized in conjunction with the southeast adjoining property as part of an overall industrial waste processing facility. As indicated throughout this report, the property to the southeast now hosts an 11-acre landfill as a result of remedial activities conducted in the area. Section 5.4 includes further details regarding the status of the Site and southeast adjoining property as they relate to historical operations.

Historical and current adjoining/adjacent property uses have historically included dwellings, a church, a school and agricultural land. Additionally, a railroad line (currently inactive) is located along the eastern Site boundary. Railroad ties are commonly treated with chemicals, such as creosote, to prevent the wood from decaying, railroad ballast often contains elevated concentrations of heavy metals, and locomotives once used polychlorinated biphenyls (PCBs). Because these contaminants have the potential to impact the soil and groundwater at the Site, the adjacent rail property to the east is considered an REC.

6.0 SITE RECONNAISSANCE

Conducted by: Mr. Daniel Riker, P.G., Senior Hydrogeologist

Date of site visit: Thursday, December 19, 2013

Representative photographs from the site visit are included in the Figures and Photographs section of this report. Site visit limitations are outlined in Section 2.5 above.

6.1 Interior Observations

The Site is currently undeveloped land.

6.2 Exterior Observations

6.2.1 Historical Usage

Quarry Lake is located on the southwestern portion of the Site; such was historically associated with the south adjoining property. Refer to Section 5.4 above for details.

6.2.2 Hazardous Substances and Petroleum Products in Connection with Identified Usages

No apparent hazardous substances or petroleum products were observed on the exterior portion of the Site at the time of the site visit.

6.2.3 Storage Tanks

No apparent indications of aboveground or underground storage tanks (e.g., fill ports, vent pipes, access ways) were observed on the exterior portion of the Site at the time of the Site visit. In addition, no records were readily available or reasonably ascertainable under the Scope of Work of this assessment as of the date of this report submission that indicated storage tanks have been installed, removed, closed in place, or abandoned on exterior portions of the Site.

6.2.4 Odors

Noted	Additional Information
No	No apparent strong, pungent, or noxious odors were noted on the exterior portion of the Site at the time of the site visit.

6.2.5 Pools of Liquid(s)

Observed	Additional Information
No	No apparent pools, sumps, or standing water containing liquids likely to be hazardous substances or petroleum products were noted on the exterior portion of the Site at the time of the site visit.

6.2.6 Unidentified Substance Containers

No apparent unidentified substance containers were observed on the exterior portion of the Site at the time of the site visit.

6.2.7 Pits, Ponds, or Lagoons

Observed on the Site – Type	Additional Information
Yes	Quarry Lake is located on the southwestern portion of the Site; such was historically associated with the south adjoining property. Refer to Section 5.4 above for details.

6.2.8 Stained Soil or Pavement

Observed on the Site - Type	Additional Information
No	No apparent stained soils or pavement were observed at the Site at the time of the site visit. As such, there are no apparent RECs related to stained soils or pavement at the Site at this time.

6.2.9 Stressed Vegetation

Observed on the Site	Additional Information
No	No apparent stressed vegetation was observed at the time of the site visit. As such, there are no apparent RECs related to stressed vegetation at the Site at this time.

6.2.10 Solid Waste

Observed on the Site	Additional Information
No	No apparent solid waste disposal areas were observed at the time of the site visit.

6.2.11 Wastewater

Observed on the Site	Additional Information
No	Wastewater does not appear to be discharged on the Site. As such, there are no apparent RECs related to wastewater discharge at this time.

6.2.12 Wells

Observed on the Site - Type	Additional Information
No	No apparent wells were observed on the Site at the time of the site visit; however, groundwater testing was conducted at the Site as of Fall 2013. Refer to Section 5.4 above for details.

6.2.13 Septic Systems

Observed on the Site	Additional Information
No	No apparent indications of on-Site septic systems or cesspools were observed on the Site at the time of the site visit. As such, there are no apparent RECs related to septic systems at the Site at this time.

6.2.14 Polychlorinated Bi-phenyls (PCBs) Containing Equipment

No apparent electrical or hydraulic equipment reportedly containing PCBs were observed on the exterior portion of the Site at the time of the site visit.

7.0 INTERVIEWS

7.1 Site Representative

The following individual was interviewed as part of this assessment.

- Ms. Amy Fisk, Brownfields Project Manager associated with Niagara County

According to information obtained through the interview, the following was identified:

- The Site is currently vacant land and is located adjacent to a landfill. This adjacent property is listed currently as a New York State Class 4 Superfund Site (Frontier Chemical-Site Code 932043). Quarry Lake located at the Site was removed from this State listing by the NYSDEC in October 2013.

The notes from the interview are included in Appendix 5.

7.2 Local Government Officials

Refer to Section 5.5.3 above for details.

7.3 Tribal Records

The closest territory to the Site is the Tuscarora Indian Reservation, which is located approximately six miles to the northwest of the Site. In accordance with ASTM Standard Practice E1527-05, tribal records will only be reviewed if the subject Site falls on or within one mile of Native American Sovereign Territories. Therefore, tribal government representatives were not contacted as part of this AAI Phase I ESA report.

7.4 New York State Department of Environmental Conservation

A FOIL request was submitted to the NYSDEC on November 25, 2013. A letter dated November 26, 2013, stated that the NYSDEC acknowledged LaBella's FOIL request and has initiated a records search. On Wednesday, December 4, 2013, LaBella reviewed records pertaining to the Site and surrounding properties at the NYSDEC office. All relevant information obtained was incorporated into Section 5.4.

7.5 Niagara County Health Department

A FOIL request was submitted to the NCHD on November 25, 2013. A response was received on Monday, November 25, 2013. On Wednesday, December 4, 2013, LaBella reviewed records pertaining to the Site and surrounding properties at the NYSDOH office. All relevant information obtained was incorporated into Section 5.4 above.

8.0 FINDINGS, OPINIONS AND CONCLUSIONS

We have performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E 1527-05 for (a portion of) an unaddressed parcel at Townline Road (SBL No. 164.00-3-36), Town of Pendleton, Niagara County, New York, the Site.

8.1 Findings

Any exceptions to, or deletions from, this practice are described in Section 2.5 of this report. Based on the results of this assessment, the following REC has been identified at the Site:

SECTION #3.4.4 – Current Use of the Adjoining Properties
And SECTION #5.5 - Historical Use Information on the Property and Adjoining Properties

A rail line (currently inactive) is located along the eastern Site boundary. Railroad ties are commonly treated with chemicals, such as creosote, to prevent the wood from decaying. In addition, railroad ballast often contains elevated concentrations of heavy metals. Because these contaminants have the potential to impact the soil and groundwater at the Site, the adjacent rail property to the east is considered an REC.

8.1.1 Additional Findings

Based on the results of this assessment, apparent Historic Recognized Environmental Conditions have been identified at the Site:

SECTION #5.4 – Historical Site Operations

The lake located on the southwestern portion of the Site (Quarry Lake) was historically associated with the operations which were formerly conducted at the south adjoining property (now an 11-acre landfill). Recent groundwater and surface water testing at the Site (Fall 2013) has confirmed that the area of the lake is ready to be open to the public for unrestricted use. In addition, the south adjoining 11-acre landfill is currently undergoing an Operation, Maintenance and Monitoring Plan under the authority of the NYSDEC.

Based on the results of this assessment, no apparent de minimis conditions have been identified at the Site.

8.2 Data Failures and Data Gaps

8.2.1 Data Failures

ASTM 1527-05 defines a data failure as a failure to achieve the historical research objectives of AAI even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Specifically, the historical research objectives include identifying all obvious uses of the Site from the present, back to the Site's first developed use, or back to 1940, whichever is earlier.

A data failure was not encountered within Scope of Work of this assessment.

8.2.2 Data Gaps

ASTM 1527-05 defines a data gap as a lack of or an inability to obtain information required by this practice despite *good faith* efforts by the *environmental professional* to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to site reconnaissance, interviews, data failure, or lack of a User Questionnaire.

Data gaps were encountered within the Scope of Work of this assessment. The first data gap includes the limited visual inspection of the Site grounds due to size, snow cover and vegetative growth. This data gap does not appear to be significant based on the extent of and observations made during the site visit, review of available historical information, and information gained during the interviews.

8.3 Opinion of Findings

Based on the findings of this assessment, no further investigation appears warranted at this time.

9.0 DEVIATIONS

No deviations were made to the report, other than the Limitations and Exceptions as stated in Section 2.5.

10.0 ADDITIONAL SERVICES

No additional services were provided or agreed upon as part of this assessment.

11.0 REFERENCES

We declare that, to our knowledge and belief, we meet the definition of Environmental Professional as defined in ASTM Standard Practice E1527-05. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting at the subject property.

We have developed and performed the Scope of Work for this assessment in conformance with the standards, practices, and limitations set forth in ASTM Standard Practice E1527-05.

A copy of all information collected during this assessment including photographs, maps, notes, and other material will be kept on file at the offices of LaBella. This information is available at your request.

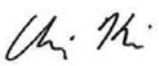
12.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

We declare that, to the best of our knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of this part. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property.

We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

The following representatives of LaBella Associates, P.C. assisted in the completion of this report:

Daniel E. Riker, P.G.
Senior Hydrogeologist
Environmental Professional



Chris Kibler
Environmental Analyst
Environmental Professional

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13.0 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

Gregory Senecal, CHMM | Director, Environmental Services (Environmental Professional)

As Director of Environmental Services, Greg is responsible for the direction of all environmental investigation related projects undertaken by the firm. Greg has more than 20 years experience scoping, scheduling, and reviewing Phase I Environmental Site Assessments, Phase II Environmental Site Assessments, and remedial efforts undertaken by the firm.

Greg is a Certified Hazardous Materials Manager and has extensive experience in the field of Environmental Management relating to Phase I and Phase II Environmental Site Assessments, remediation, and environmental compliance evaluations. Mr. Senecal has conducted or supervised over 1,500 Phase I Environmental Site Assessments and over 600 Phase II Environmental Site Assessments during his time with LaBella.

PHASE I ESA TEAM

Adam Zebrowski | Phase I ESA Program Manager (Environmental Professional)

Adam is the Phase I ESA Program Manager for LaBella Associates responsible for the coordination and successful completion of Phase I Environmental Site Assessments. Working with financial institutions, attorneys and private developers, Adam provides efficient analysis and completion of environmental reports required for property transactions. The site assessments include evaluation of environmental liability associated with properties such as warehouses, gas stations, auto repair facilities, manufacturing facilities, farms, commercial properties, and residential homes.

In addition, Adam has experience managing Phase II ESAs and other projects including: remediation, underground storage tank (UST) removal, vapor intrusion, geophysical surveys, and tank tightness testing. He is very familiar with regulatory criteria/compliance for projects within several states.

Emily Gillen | Environmental Analyst (Environmental Professional)

Emily is an Environmental Analyst with six years of experience conducting Phase I and Phase II Environmental Site Assessments and remedial projects. Current work includes soil and groundwater sampling, soil vapor analysis, petroleum storage tank removals, and review and evaluation of analytical groundwater monitoring data. From these experiences, she commands a solid understanding of both state and federal regulations.

Chris Kibler | Environmental Analyst (Environmental Professional)

Chris is an Environmental Analyst with five years experience responsible for the coordination and successful completion of Phase I and II Environmental Site Assessments (ESAs). Working with financial institutions, attorneys, private developers and municipalities, he conducts ESAs in support of real estate transactions and brownfield redevelopment initiatives. Mr. Kibler's experience includes historical and regulatory records review; field sampling and data collection using a variety of techniques and equipment; the review and evaluation of field and laboratory analytical data; and the preparation of technical reports defining potential environmental liabilities and, if warranted, remedial options.

Sarah Roth | Environmental Analyst

Sarah is an Environmental Analyst responsible for preparing Phase I Environmental Site Assessments. Working with financial institutions, attorneys and private developers, Sarah provides efficient analysis and completion of environmental reports required for property transactions. Sarah has completed Phase I ESA reports and Transaction Screens for a wide variety of residential, commercial, industrial, and manufacturing properties.

Michael Winderl, Jr. | Environmental Analyst

Michael is an Environmental Analyst responsible for preparing Phase I Environmental Site Assessments. His duties include regulatory records searches, site visits, interviews with property owners and municipal entities, and historical research for assessments completed in New York State.

Danielle Kaveney, EIT | Environmental Engineer

Danielle is an Environmental Engineer responsible for preparing Phase I Environmental Site Assessments. Working with financial institutions, attorneys and private developers, Danielle provides efficient analysis and completion of environmental reports required for property transactions.

Ben Stracuzzi | Environmental Analyst

Ben is an Environmental Analyst responsible for the coordination and successful completion of Phase I Environmental Site Assessments. Working with financial institutions, attorneys and private developers, Ben conducts regulatory records searches, site visits, interviews with property owners and municipal entities, and historical research for assessments completed in New York State.

Gabrielle Rinaldi | Environmental Analyst

Gabrielle is an Environmental Analyst and is responsible for the preparation of Phase I Environmental Site Assessments. The site assessments include evaluation of environmental liability associated with properties, and Gabrielle provides efficient analysis and completion of environmental reports for financial institutions, attorneys and private developers.

PHASE II ESA TEAM

Dennis Porter, CHMM | Phase II ESA Program Manager (Environmental Professional)

Dennis is the Phase II Environmental Site Assessment and Remediation Program Manager and is a Certified Hazardous Materials Manager. He has managed numerous Phase I and II Environmental Site Assessments, Remedial Investigations, Feasibility Studies, industrial hygiene studies, project monitoring and asbestos sampling surveys. Mr. Porter also has significant experience in Brownfield Redevelopment and completed numerous Site Redevelopment Projects under the NYSDEC's Brownfield Cleanup Program.

Robert Napieralski, CPG | Western NY Regional Manager (Environmental Professional)

Rob has more than 22 years of professional consulting experience for public and private sector clients involving a wide range of environmental, infrastructure and transportation projects. His background includes extensive experience with: environmental due diligence assessments, brownfield investigation, remediation and redevelopment, regulatory compliance and permitting, solid waste management facility permitting and monitoring, municipal infrastructure planning, design and construction, SEQRA/NEPA compliance and documentation, and Locally Administered, federally funded transportation projects. Responsibilities include project management, business development and client management.

Daniel Noll, PE | Remedial Design Engineer (Environmental Professional)

With more than 14 years of environmental engineering experience, Dan has served a variety of clients including developers, financial institutions, industrial clients, and municipalities. Dan has managed numerous Phase II Environmental Site Assessments and remediation projects such as groundwater monitoring programs, soil vapor investigations, test pit investigations, geo-probe investigations underground storage tank removals, soil removals, bio-cell remediations, and in-situ groundwater remediation. Additionally, Dan has experience with the design and installation oversight of mitigation systems.

Dan Riker, PG | Sr. Hydrogeologist (Environmental Professional)

Dan is a Sr. Hydrogeologist and Project Manager with more than 18 years of experience conducting preliminary site assessments, Phase I and II Environmental Site Assessments, treatment technology assessments, site characterization, remedial investigations, remedial design, and brownfield cleanup projects. Responsibilities also include coordination with State and Federal regulatory agencies as well as subconsultants.

David Engert, CHMM | Sr. Environmental Geologist (Environmental Professional)

Dave has more than 14 years of experience as a Geologist and Project Manager. Dave has managed numerous Phase I and Phase II Environmental Site Assessments, soil and groundwater remediation projects, groundwater monitoring programs and vapor intrusion investigations for both public and private sector clients. Additionally, Dave has managed Brownfield projects through the New York State Brownfield Cleanup Program.

Jason Jaskowiak, EIT | Environmental Engineer (Environmental Professional)

Jason is an Environmental Engineer with five years of environmental consulting experience. Project experience includes: waterworks business operations plan development, drinking water modeling, traffic control plans, transportation analysis, sanitary sewer evaluation studies, sampling plans, stormwater illicit discharge survey's, GIS data collection and editing, waste water analysis (TSS, VSS, BOD, pH, TDS, alkalinity), stormwater modeling and design, septic design, permitting, Phase I research, Grant applications , site exploration supervision and soil sampling data analysis.

Kyle Miller | Sr. Environmental Geologist (Environmental Professional)

Kyle is a Senior Environmental Geologist with over 17 years of experience conducting Phase I and Phase II Environmental Site Assessments, environmental investigations, and remedial projects. He has performed numerous site assessments for potential subsurface contamination including test pits, supervision of well installation and sampling, soil vapor analysis, petroleum storage tank removals, and review and evaluation of analytical groundwater monitoring wells.

Michael Pelychaty | Environmental Geologist (Environmental Professional)

Mike is an environmental geologist with over 15 years of experience in the field of Environmental Management relating to Phase I and Phase II Environmental Site Assessments, Remedial Investigations, Brownfield Remedial Investigations and Corrective Actions.

Jennifer Gillen, MS | Environmental Geologist

Jennifer primarily serves as Environmental Geologist responsible for performing Phase I Environmental Site Assessments and Transaction Screens. She has experience conducting Phase I ESA's throughout New York State, Massachusetts and Pennsylvania. These site assessments include assessment of environmental liability associated with properties such as warehouses, gas stations, auto repair facilities, colleges, universities, hospitals, manufacturing facilities, farms, commercial properties, and residential homes. Additionally, Jennifer has been involved in the planning and completion of numerous Phase II investigations and two Brownfield Opportunity Area Studies. From these experiences, she commands a solid understanding of both state and federal regulations and is proficient in GIS mapping.

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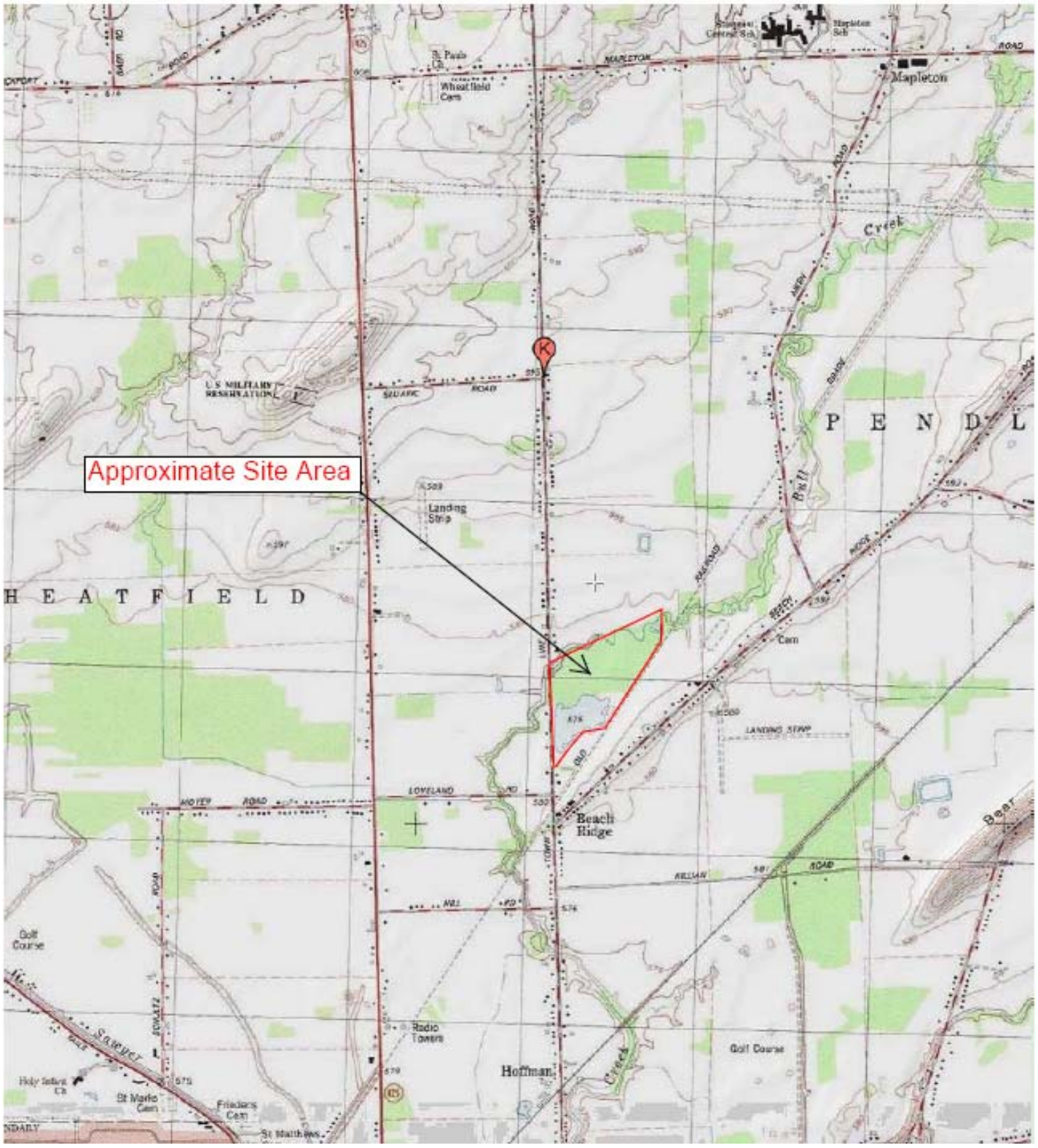
LABELLA Associates, P.C. | Engineering Architecture Environmental Planning

FIGURES AND PHOTOGRAPHS



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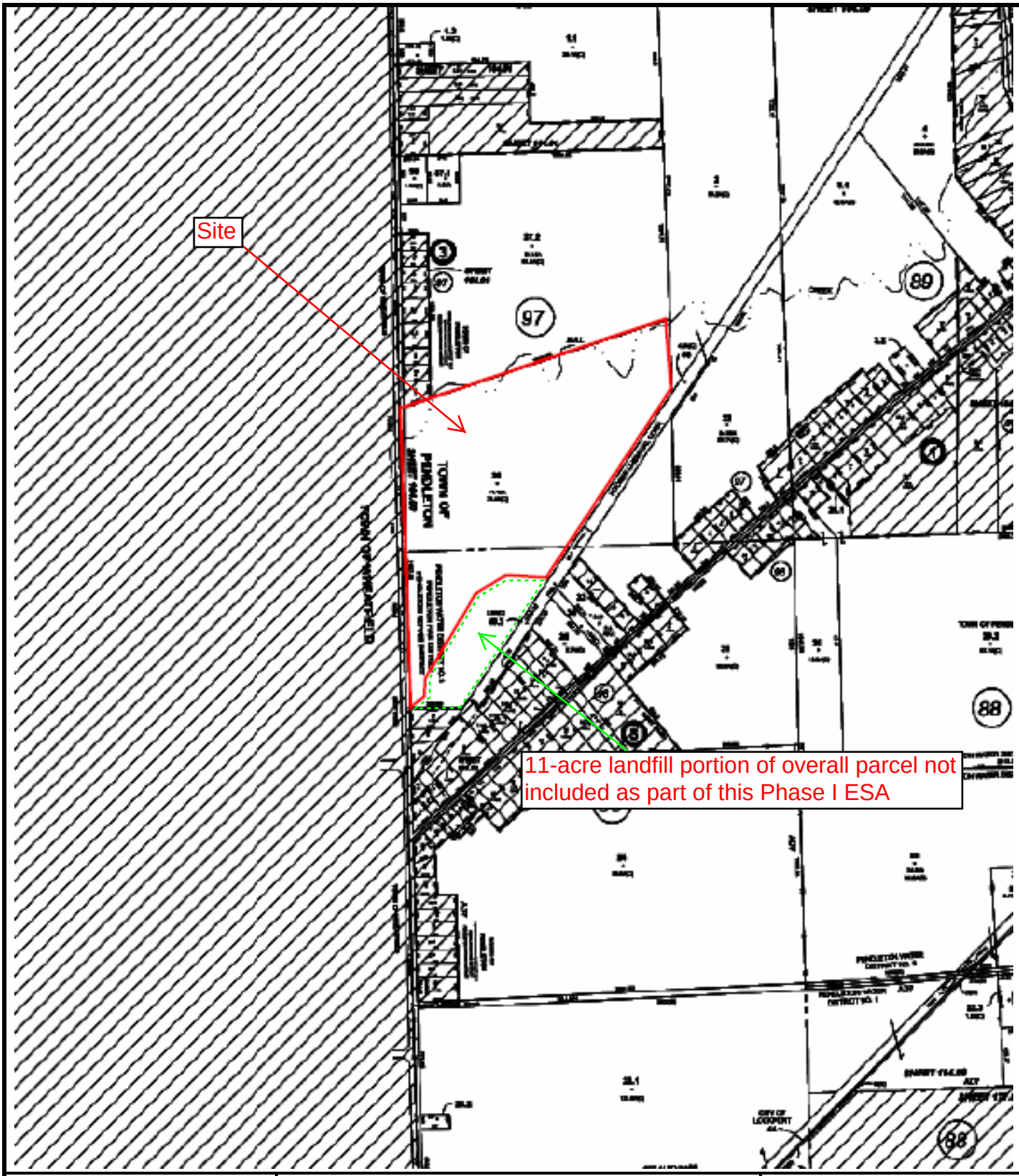
Not To Scale

FIGURE 1
SITE LOCATION MAP

Unaddressed Parcel at Townline Road
Pendleton, New York

LABELLA

PROJECT NO. 214058



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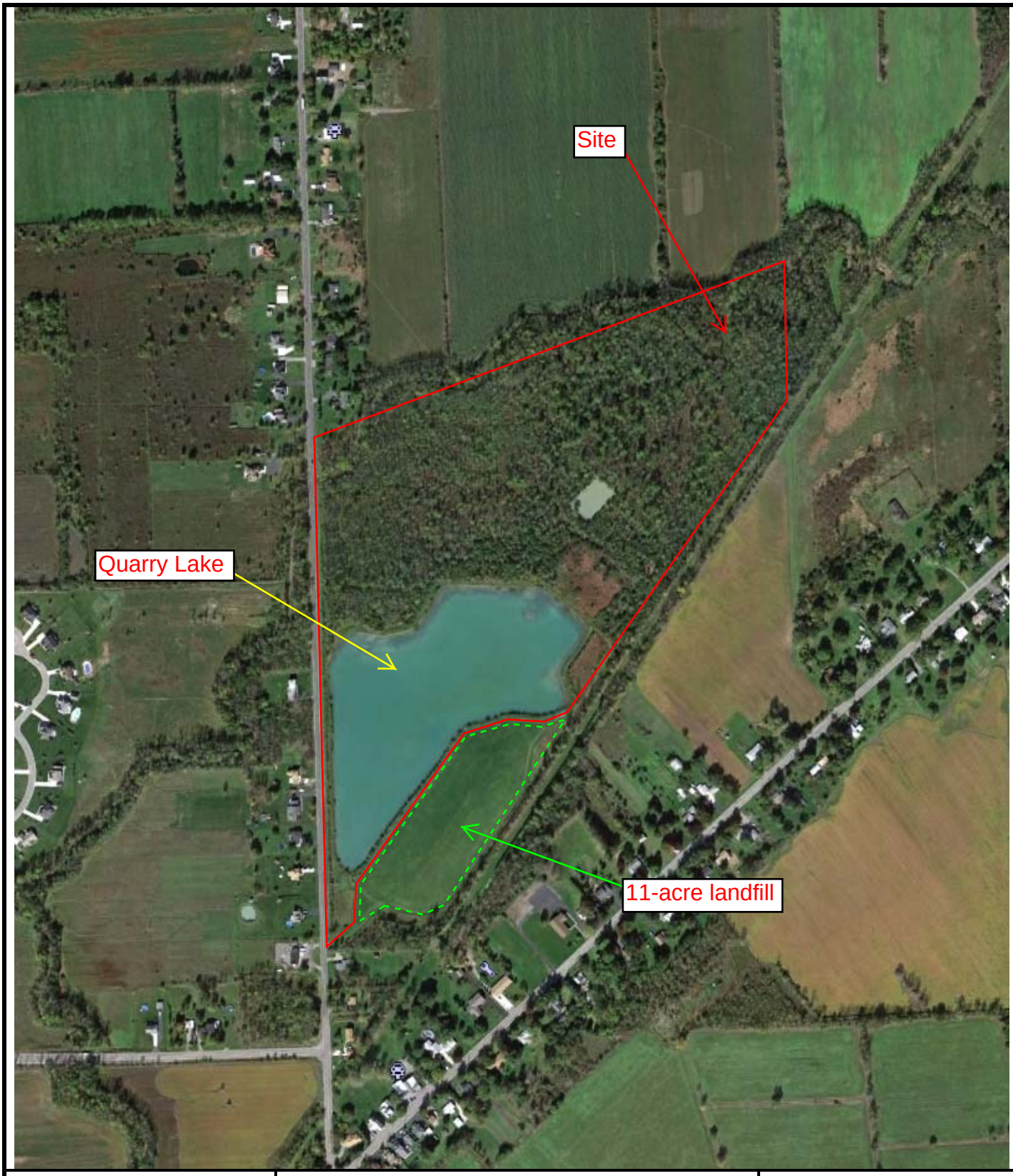
Not To Scale

FIGURE 2
PROPERTY TAX MAP

Unaddressed Parcel at Townline Road
Pendleton, New York

LABELLA

PROJECT NO. 214058



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Not To Scale

FIGURE 3
SITE SKETCH

Unaddressed Parcel at Townline Road
Pendleton, New York

LABELLA

PROJECT NO. 214058

Wooded/fallow land located throughout the Site.

Small pond located northeast of Quarry Lake at the Site.

Wooded/fallow land located throughout the Site.

Wooded/fallow land located throughout the Site.

Wooded/fallow land located throughout the Site.

One of several hunting tree stands located throughout the Site.

Wooded/fallow land located throughout the Site.

Wooded/fallow land located throughout the Site.

Quarry Lake located on the southern portion of the Site.

Quarry Lake located on the southern portion of the Site.

South adjoining property looking north toward Quarry Lake.

South adjoining landfill property.

South adjoining landfill property.

East adjacent properties.

Southeast adjacent property.

West adjacent properties.

West adjoining property looking east toward the Site.

LABELLA Associates, P.C. | Engineering Architecture Environmental Planning

APPENDIX 1

Regulatory Records

Records Checks:

Conducted by Chris Hibler
Title Env. Analyst
Signature:

Site Address Undeveloped Parcel @ Tuttle Rd.
City/State/Zip Pendleton, NY
County Niagara
Tribal Region

NYSDEC Region: 9

Listing	Search radius	Sites listed details attached	Last updated:
NPL	1.0 mile	O	10-31-13
http://www.epa.gov/superfund/sites/query/queryhtm/nplfin.htm			
Delisted NPL	0.5 mile	O	11-21-13
CERCLIS	0.5 mile	O	11-21-13
CERCLIS NFRAP	0.5 mile	O	11-21-13
http://cfpub.epa.gov/supercpad/cursites/srchsites.cfm			
RCRA TSD CORRACTS	1.0 mile	O	11-15-13
RCRA TSD Non -CORRACTS	0.5 mile	O	11-15-13
RCRA LQG Generator	Site & adj. prop.	O	11-15-13
RCRA SQG Generator	Site & adj. prop.	O	11-15-13
RCRA CESQG Generator	Site & adj. prop.	O	11-15-13
www.epa.gov/enviro/html/rcris/rcris_query_java.html			
Federal IC/EC Registry	Site	O	25-Jan-07
Federal listings are not currently available in a searchable database			
State IC/EC Registry	Site	O	Bi-weekly
Sent FOIL Request to NYSDEC			
Received Response:			
ERNS	Site	O	
http://www.nrc.uscg.mil/foia.html			
IHWDS	1.0 mile	O (Site, Soil ok)	Bi-weekly
State Voluntary Cleanup Sites	0.5 mile	O	Bi-weekly
State Brownfield Sites	0.5 mile	O	Bi-weekly
http://www.dec.ny.gov/cfmx/extapps/derfoil/index.cfm			
Haz. Sub.	0.5 mile	O	1998
NYSDEC Hazardous Substance Disposal Study			
Local Disposal Sites	0.5 mile	O	
(from EMC, County Soild Waste Authority or equivalent)			
Sent FOIL Requests:			
Part 360 Permitted Landfills	0.5 mile	O	Feb-06
www.dec.state.ny.us/website/dshm/sldwaste/index.htm			
NYSDEC Spills Internet Updates	0.5 mile		Weekly
Send Request to NYSDEC for detailed Spill Report Form			
Received Response:			
http://www.dec.ny.gov/cfmx/extapps/derfoil/index.cfm			
NYSDEC PBS Registration	Site & adj. prop.	O	2001
NYSDEC CBS Registration	Site & adj. prop.	O	2001
NYSDEC MOSF Registration	Site & adj. prop.	O	2001
Sent FOIL Request to NYSDEC			
Received Response:			

TRIBAL RECORDS
Sent FOIL Requests to Tribal Representative
Received Response:

Site is not located within a one mile radius of Tribal Lands.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Environmental Site Remediation Database Search Details

Site Record

Administrative Information

Site Name: Frontier Chemical - Pendleton
Site Code: 932043
Program: State Superfund Program
Classification: 04
EPA ID Number:

Location

DEC Region: 9
Address: Townline Road
City: North Tonawanda Zip: 14120
County:NIAGARA
Latitude: 43.087527778
Longitude: -78.821419444
Site Type: LANDFILL
Estimated Size: 11.000 Acres

Institutional And Engineering Controls

Control Type:
Decision Document

Control Elements:
Cover System
Fencing/Access Control
Groundwater Containment
Groundwater Treatment System
Leachate Collection
Monitoring Plan
O&M Plan

Site Owner(s) and Operator(s)

Current Owner Name: Trans Niagara Associates
Current Owner(s) Address: 2730 Transit Road
West Seneca,NY, 14224
Owner(s) during disposal: FRONTIER CHEM WASTE PROCESS, INC.
Current On-Site Operator: FRONTIER CHEMICAL PRP GROUP, C/O OLIN CORPORATION

Stated Operator(s) Address: 3855 NORTH OCOEE STREET
CLEVELAND,TN 37312
Current On-Site Operator: FRONTIER CHEMICAL PRP GROUP, C/O OLIN CORPORATION
Stated Operator(s) Address: 3855 OCOEE STREET
CLEVELAND,TN 37312

Hazardous Waste Disposal Period

From: 1959 **To:** 1976

Site Description

Location: The Frontier Chemical-Pendleton site is located on Townline Road in the Town of Pendleton, Niagara County, New York. The site is bounded by Townline Road to the west, an abandoned railroad right-of-way to the southeast and Bull Creek to the north. The area around the site is residential/agricultural. The nearest residences are located less than 100 feet from the site. Site Features: The landfill site is approximately 11 acres with significant side slopes. It is completely encompassed by fencing with a perimeter road for access to monitoring wells, leachate collection system and the groundwater treatment system. It is part of a larger 71.4 acre parcel. A lake approximately 15 acres in size (Quarry Lake; a former clay quarry), is located in the south central portion of the larger parcel and north of the landfill. History: This site was used for the treatment of industrial wastes from 1959 to 1974. Discharges from these operations went into the property lake (Quarry Lake). Over 50 barrels containing pyridine were excavated and removed from site during 1984-85. Plating wastes, pickle liquors and other liquid acid wastes from plating and metal finishing industries were treated at the site, with residuals from the waste treatment process being discharged into Quarry Lake. Much of the former Process Area was filled and graded following termination of waste treatment operations. Under Consent Orders issued in 1984, 1986 and 1988, Frontier Chemical was required to remediate Quarry Lake by draining and excavating the contaminated sediment and placing it in a containment area which was to be built on-site. In addition, Frontier was required to investigate suspected disposal areas to the southeast of the lake. Frontier Chemical installed 12 additional monitoring wells in 1988 as a part of the investigation. Frontier Chemical did not implement and complete all the work as required by the Consent Orders and was found to be in violation. Consequently, the Department undertook the Remedial Investigation/ Feasibility Study (RI/FS) which was completed in 1991. The RI determined that the bottom sediments of Quarry Lake were contaminated with heavy metals and the process/fill area south of the lake was contaminated with both organics and heavy metals. The Record of Decision (ROD) was signed in March 1992. In March 1994, the PRP Group entered into an Order on Consent (#B9-0270-89-05) with NYSDEC to implement the RD/RA Work Plan. Site remediation consisted of the removal of the lake sediments and it's placement in an on-site landfill. The site remediation project was designed in 1993 and 1994, the construction was completed in 1995 and

1996 by Sevenson Environmental Services, Inc. Site management activities began in 1997. Site Management includes inspections, leachate collection, on-site treatment, hydraulic monitoring and groundwater quality monitoring.

Summary of Project Completion Dates

Projects associated with this site are listed in the Project Completion Dates table and are grouped by Operable Unit (OU). A site can be divided into a number of operable units depending on the complexity of the site and the number of issues associated with a site. Sites are often divided into operable units based on the media to be addressed (such as groundwater or contaminated soil), geographic area, or other factors.

Contaminants of Concern (Including Materials Disposed)

Type of Waste	Quantity of Waste
ORGANICS, DYES, HEAVY METAL SLUDGES, PCB'S	UNKNOWN
WASTE OIL, SOLVENTS, ACIDS, HALOGENATED	UNKNOWN

Site Environmental Assessment

The remedial work done at the site has addressed the environmental problems. Monitoring indicates that the wastes are contained by the leachate collection system and contaminants are not migrating off site.

Site Health Assessment

The landfill site is fenced and properly capped; therefore, people are not likely to contact contaminated soils under the cap. The site is served by a public water supply that obtains water from a different source not affected by this contamination. People using the lake for recreational purposes such as fishing and boating will not come into direct contact with chemical contaminants because monitoring shows no impacts to the lake water from the disposal area and the sediment is not readily accessible.

For more Information: E-mail Us

Refine Current Search

LABELLA Associates, P.C.
300 State Street
Rochester, New York 14614

Telephone: (585) 454-6110
Facsimile: (585) 454-3066

TELEPHONE LOG

CONTACT NAME:	Dawn Timm	**BY:**	Chris Kibler
TELEPHONE:	716-434-6568	**JOB #:**	214058
ORGANIZATION:	Niagara County Landfill and Recycling Center	**DATE:**	11/25/13
PROJECT:	Unaddressed Parcel at Townline Road, Pendleton, New York	**RE:**	Solid Waste Information

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The Niagara County landfill is located on the Route 96 bypass between Route 31 and Hinman Road. A BFI landfill is located in Niagara Falls in the Porter/Packard/Military Road area. Model City landfill is located in Lewiston.

The former North Tonawanda Landfill is located around the Walck Rd and Old Falls Blvd area near Wheatfield.

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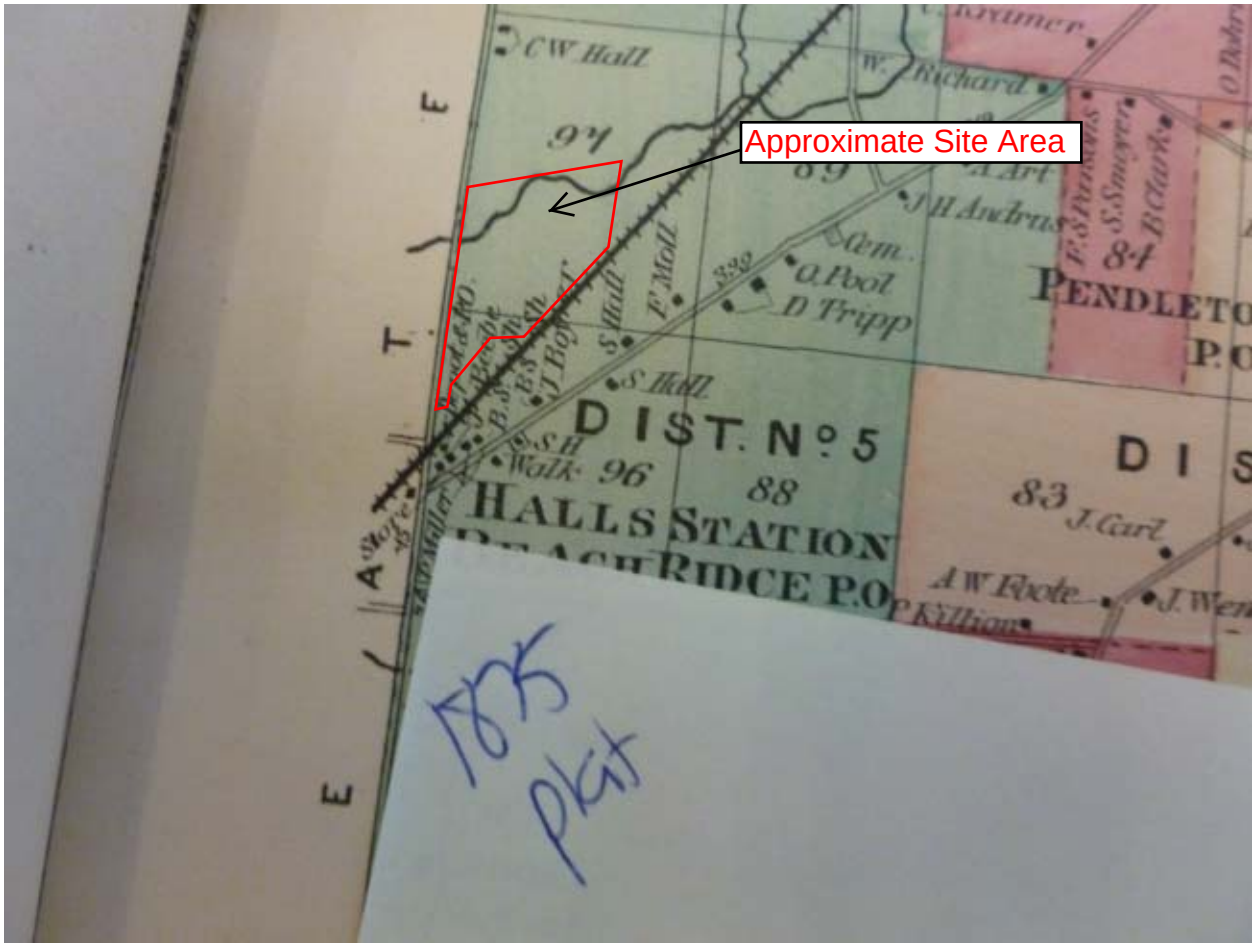
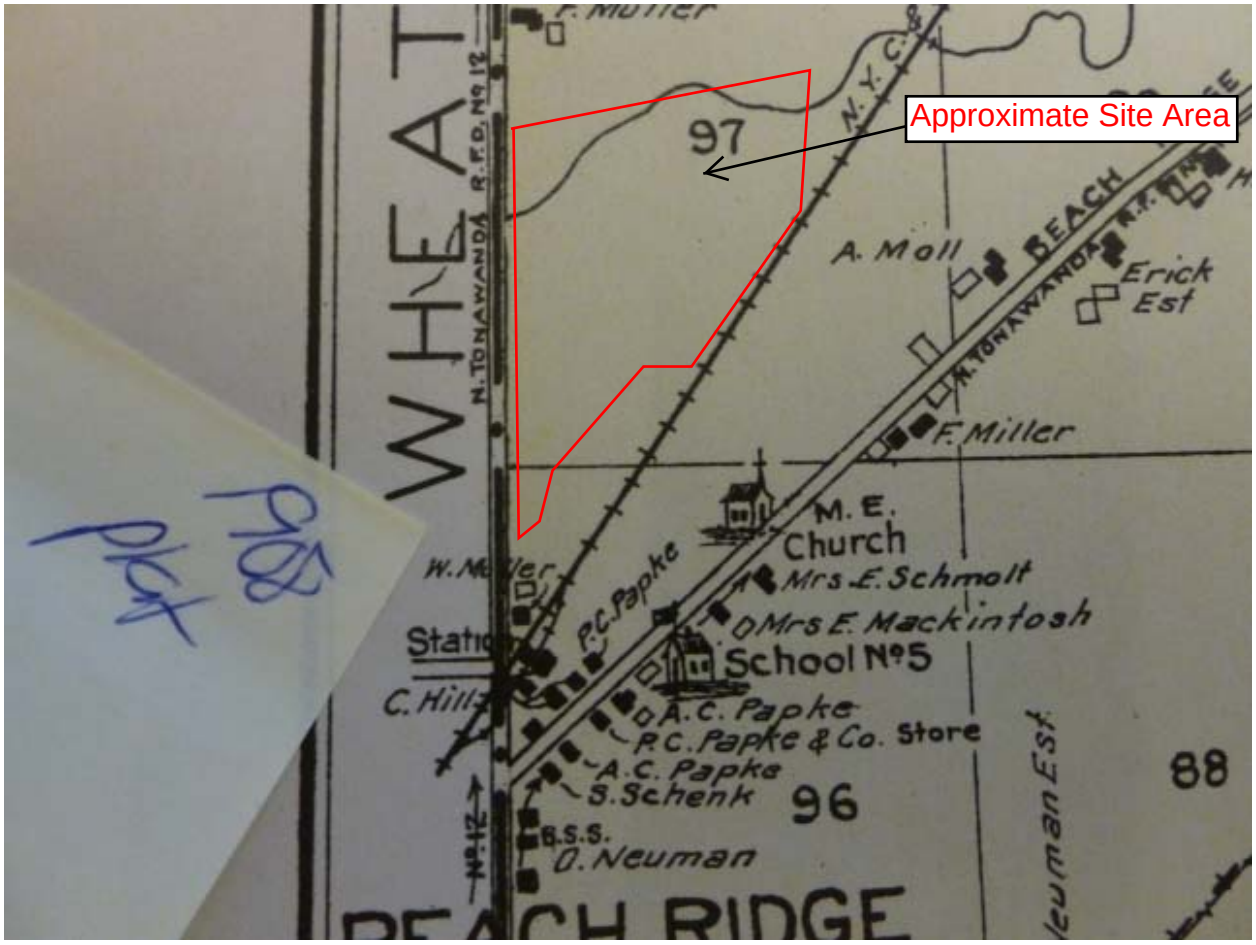
APPENDIX 2

Historical Information



1875 Plat Map

North ↑



1908 Plat Map

North ↑

Frontier Chemical
Townline Road
North Tonawanda, NY 14120

Inquiry Number: 3795494.1
November 25, 2013

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

11/25/13

Site Name:
Frontier Chemical
Townline Road
North Tonawanda, NY 14120

Client Name:
La Bella Associates, PC
300 State Street
Rochester, NY 14614

EDR Inquiry # 3795494.1

Contact: Chris Kibler

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by La Bella Associates, PC were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Frontier Chemical
Address: Townline Road
City, State, Zip: North Tonawanda, NY 14120
Cross Street:
P.O. # 214058
Project: Frontier Chemical
Certification # 3484-402A-ABC9

Sanborn® Library search results
Certification # 3484-402A-ABC9

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX 3

Aerial Photographs

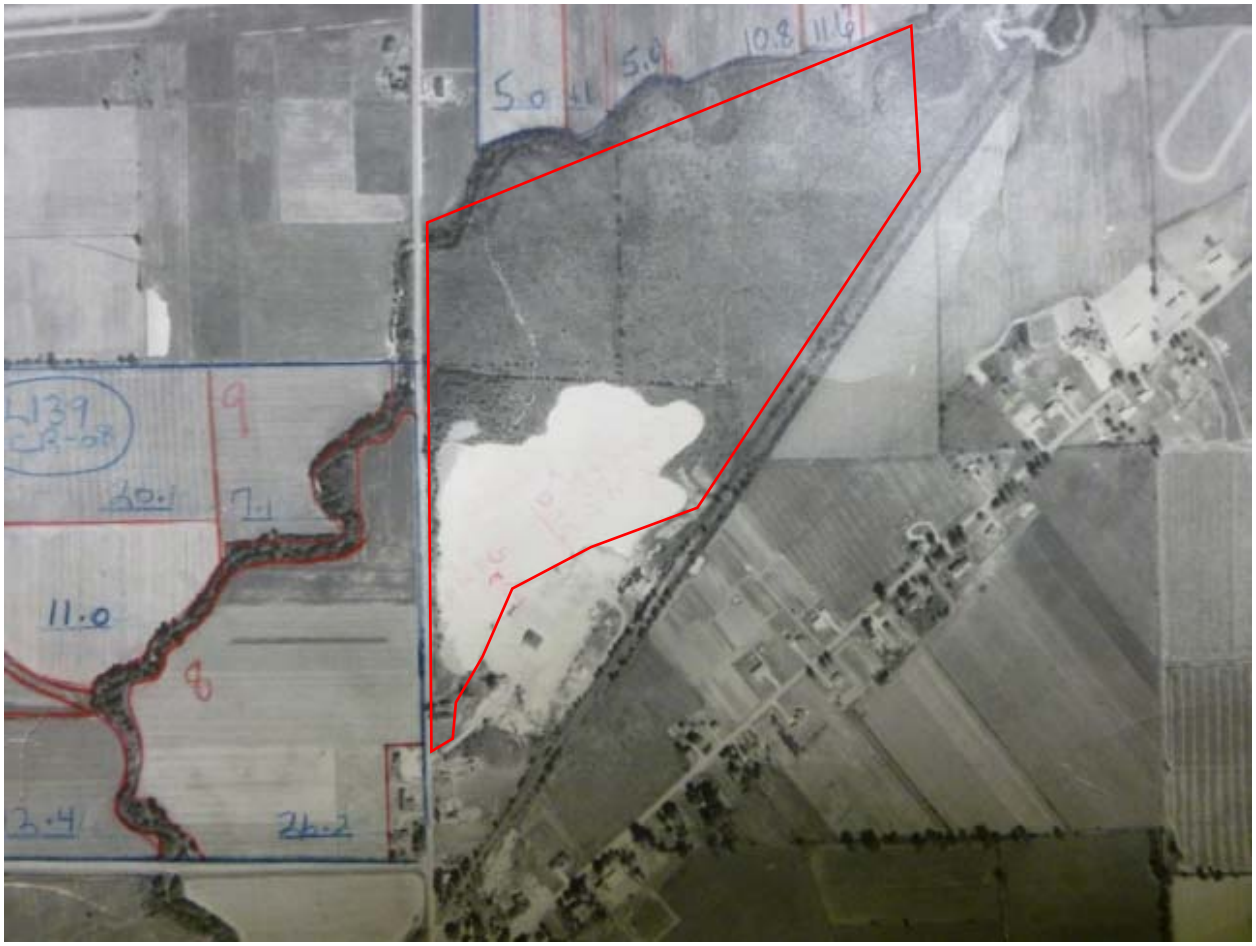
Site Boundaries are approximated on all aerials included herein.

1990 Aerial

North ↑

1972 Aerial North ↑

1966 Aerial North ↑



1958 Aerial

Aerial ↑

1951 Aerial

North ↑

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APPENDIX 4

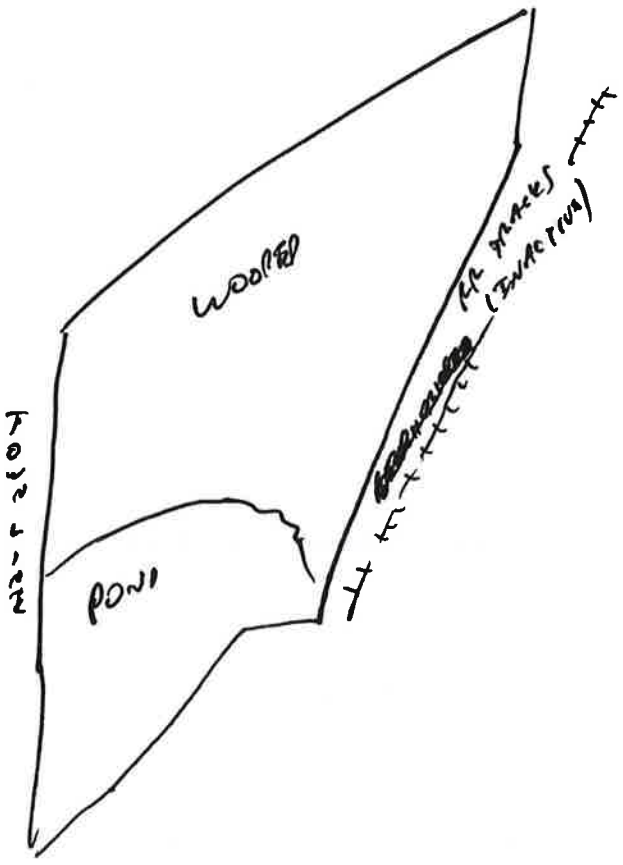
Site Reconnaissance Worksheet

LABELLA Associates, P.C.

Site Reconnaissance Worksheet

Project #	214058
Address	Unaddressed Parcel at Townline Road, Pendleton, NY SBL No. 164.00-3-36 Excludes 11-acre landfill portion of Parcel
Date of Site Inspection	12/18/13
# of Structures	0
Usage at Time of Site Inspection	VACANT
Nature of Area (circle one)	Rural Urban Suburban
Topography (If Sloping – Note Direction)	FLAT

Site Sketch (label north):



Adjacent Properties and Address:

North	LOW DENSITY RESIDENTIAL / UNDEVELOPED
East	" " " " / INACTIVE RAIL / ACTIVE & FALLOW FARM FIELDS
South	" " "
West	" " " " / UNDEVELOPED

West	

LABELLA Associates, P.C.

Site Reconnaissance Worksheet (cont.)

Petroleum Product Storage and/or Usage Yes ____ No +

(Note: Type, Quantity, Usage, Disposal Receipts)

Hazardous Substances Storage and/or Usage Yes ____ No X

(Note: Type, Quantity, Usage, Disposal Receipts)

Unidentified Substances or Containers Yes ____ No X

(Note: Type and Quantity)

Strong, Pungent, or Noxious Odors Yes ____ No X

(Note: Type and Source)

Parts Washers Yes ____ No X

(Note: Type – Self-contained or Not, Location, Waste Disposal Receipts)

LABELLA
Associates, P.C.

Site Reconnaissance Worksheet (cont.)

Pools of Liquid Likely to Contain Hazardous Substances Or Petroleum Products Yes ____ No X

(Note: Location, Potential Product/Hazardous Substance(s), Source)

Stains or Corrosion Yes ____ No X

(Note: Location, Potential Product/Hazardous Substance(s), Source)

Floor Drains Yes ____ No X

(Note: Location, Discharge Location, Type of Wastewater Discharged to Drain, Associated Oil/Water Separator)

Sumps Yes ____ No X

(Note: Location, Discharge Location, Type of Wastewater Discharged to Sump)

Equipment Potentially Containing Polychlorinated Bi-phenyls Yes ____ No X

(Note: Location, Type – Pad/Pole Mounted, PCB-containing, Owner, Condition)

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Site Reconnaissance Worksheet (cont.)

Elevators Yes ____ No X

(Note: Location, Hydraulic/Mechanical/Electric, Underground Components, Location of Reservoir)

Lifts Yes ____ No X

(Note: Location, Hydraulic/Mechanical/Electric, Underground Components, Location of Reservoir)

Lift Scars Yes ____ No X

(Note: Location, Former Hydraulic/Mechanical/Electric, Underground Components, Location of Reservoir)

Stained Soil Yes ____ No ____

(Note: Location, Apparent Type of Staining, Source)

NA - SNOW COVER

Stained Pavement Yes ____ No X

(Note: Location, Apparent Type of Staining, Source)

- NA: UNPAVED

Stressed Vegetation Yes ____ No X

(Note: Location, Source)

NOTE - SNOW COVER NOT AREA EITHER LAWN OR HEAVILY VEGETATED

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Site Reconnaissance Worksheet (cont.)

Evidence of Solid Waste Disposal and/or Filling Yes ____ No X

(e.g., mounding, piles, etc.)

(Note: Location, Contents, Staining, Odors)

Storm Drains Yes ____ No X

(Note: Location, Associated with Wastewater Treatment or Disposal, Discharge Location, Staining, Odors)

Ditches Yes X No ____

(Note: Location, Associated with Wastewater Treatment or Disposal, Discharge Location, Staining, Odors)

ALONG TOWLINE ROAD
DRAINAGE DITCH FOR ROAD ONLY

Underground Injection Well/Dry Well Yes ____ No X

(Note: Location, Associated with Wastewater Treatment or Disposal, Type of Wastewater Discharged To)

Septic Systems Yes ____ No X

(Note: Location, Direction of Leach Lines, Type of Wastewater Discharged)

Monitoring Wells Yes X No ____

(Note: Location, Purpose, Analytical Data Available)

DEC REPORTS ASCRIBE RESULTS

LABELLA Associates, P.C.

Site Reconnaissance Worksheet (cont.)

Potable Water Wells Yes ____ No ✓

(Note: Location and Analytical Data Available)

Indicators of Historical Usages (e.g., signs, equipment, etc.) Yes ____ No ✓

(Note: Item and Indication of Usage Type)

Limitations:

☐ None ☒ Overgrown vegetation ☐ Topography

☒ Snow ☒ Size

☐ Access (Note Inaccessible Structures:

Additional Notes:

LABELLA Associates, P.C.

Site Reconnaissance Worksheet (cont.) – Aboveground Storage Tanks

Aboveground Storage Tanks Yes ____ No ⊗

Note: Location, capacity, contents, usage, in-service (yes/no), fill port location, vent pipe location, leaks/stains/spills in vicinity, storage conditions – under asphalt, vaulted, under grassy area, fuel pumps)

#	Capacity	Contents	Location	Storage Conditions	Usage

Notes:

LABELLA Associates, P.C.

Site Reconnaissance Worksheet (cont.) – Underground Storage Tanks

Evidence of Underground Storage Tanks Yes ____ No X

(i.e., vent pipes, fill ports, pumps, fill port covers)

(Note: Location, Type of Evidence, capacity, contents, usage, in-service (yes/no), fill port location, vent pipe location, leaks/stains/spills in vicinity, storage conditions – under asphalt, vaulted, under grassy area, fuel pumps)

Evidence of the Potential Removal/Closure of Yes ____ No X

Underground Storage Tanks (e.g., patches in pavement, piping, etc.)

(Note: Location, Type of Evidence, leaks/stains/spills in vicinity)

Additional Site Notes:

SITE APPEARS TO BE FREE OF EVIDENCE OF ANY PAST DEVELOPMENT. THIS MAY BE DUE TO WET/SATURATED CONDITIONS OF SOIL IN MANY PARTS OF THE SITE.

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APPENDIX 5

Site Representative Interview

LaBella Associates, P.C.

300 State Street, Suite 201
Rochester, New York 14614-1098
Phone: (585) 454-6110
FAX: (585) 454-3066

PHASE I ESA INTERVIEW

Project No. 214058 Date of Interview: 12/11/13 Conducted by: Chris Kibler

Address: Unaddressed Parcel at Townline Road (SBL No. 164.00-3-36), Pendleton, New York; Site does not include 11-acre landfill portion of overall 71-acre parcel

Interviewee: Amy Fisk How long affiliated with Site: 6 months

Title/Position/Relationship to Site ☐Owner ☐Owner Representative ☐Former Owner ☐Occupant
☐Former Occupant ☐Neighbor ☐Purchaser ☐Seller ☐Real estate agent
☐Property Manager ☒Other (explain): Niagara County's Brownfields Project Manager

Additional Contacts:

1. What is the purpose of this assessment? ☐Selling the property ☐Purchasing the property ☐Construction loan
☐Re-financing the property ☒Other (explain): Determine environmental conditions of the property prior to Niagara County involuntarily acquiring the property via tax foreclosure

2. Do you have a PROPERTY SURVEY MAP or OTHER MAPPING of the Site available?
☐No ☒Yes ☐Unknown (if Yes, please provide if possible)

3. Number of building(s): None Total sq. ft. of building(s):
Acreage of Site: 60 acres (excludes 11 acre landfill) ☐Unknown ☒NA

4. What is the CURRENT USE(S) of the Site and DATES, if known? ☐Unknown
Site is vacant

5. What are the PAST USE(S) of the Site and DATES of occupancy, if known? ☐Unknown
Use - Vacant land adjacent to a Frontier Chemical landfill Dates of Usage - N/A

6. Have any buildings been BURNED or DEMOLISHED on the Site? ☒No ☐Yes ☐Unknown
Explain:

Was the Debris:
Burned on Site ☐No ☐Yes ☐Unknown Buried on Site ☐No ☐Yes ☐Unknown
Removed from Site ☐No ☐Yes ☐Unknown
Explain:

7. Is the SITE or any ADJOINING PROPERTY CURRENTLY or PREVIOUSLY utilized as any of the following?
Dry Cleaning Facility ☒No ☐Yes ☐Unknown ☐Site ☐Adjoining Property to the _____
Dates and Explain:

X-ray or Film Developing ☒No ☐Yes ☐Unknown ☐Site ☐Adjoining Property to the _____
Dates and Explain:

Is there a Metal Recovery System in Place? ☐No ☐Yes ☐Unknown
Explain:

Car Repair Shop: ☒No ☐Yes ☐Unknown ☐Site ☐Adjoining Property to the _____
Dates and Explain:

Paint/Body Shop: ☒No ☐Yes ☐Unknown ☐Site ☐Adjoining Property to the _____
Dates and Explain:

Gasoline Station: ☒No ☐Yes ☐Unknown ☐Site ☐Adjoining Property to the _____
Dates and Explain:

Industrial Property: ☐No ☒Yes ☐Unknown ☐Site ☒Adjoining Property to the South_____
Dates and Explain: Adjoining property is a New York State Class 4 State Superfund Site listed as Frontier Chemical - Pendleton with a Site Code of 932043.

8. What are the CURRENT and PREVIOUS USE(S) of the ADJOINING PROPERTIES?

Direction	Current Use/Occupant	Past Uses/Occupant
North:	Residential and Agricultural	Agricultural
South:	Capped landfill	Treatment of industrial wastes by Frontier Chemical
East:	Agricultural	Agricultural
West:	Townline Road	Townline Road

9. Is SANITARY WASTE WATER CURRENTLY or was PREVIOUSLY Generated and how is/was it Disposed of?
☒No ☐Yes ☐Unknown Discharge Point: ☐Public System ☐Private System ☐Unknown
☐Other (explain):

Is NON-SANITARY WASTE WATER CURRENTLY or was PREVIOUSLY Generated and how is/was it Disposed of?
☒No ☐Yes ☐Unknown Discharge Point: ☐Public System ☐Private System ☐Unknown
☐Other (explain):

Are any of the following CURRENTLY or PREVIOUSLY located at the Site?
SEPTIC TANK: ☒No ☐Yes ☐Unknown Location:
Dates of Usage:
LEACHFIELD: ☒No ☐Yes ☐Unknown Location:
Dates of Usage:
INJECTION WELL: ☒No ☐Yes ☐Unknown Location:
Dates of Usage:
DRY WELL: ☒No ☐Yes ☐Unknown Location:
Dates of Usage:

Are any of the following CURRENTLY or PREVIOUSLY located at the Site?
FLOOR DRAINS: ☒No ☐Yes ☐Unknown Location:
Discharge Point:
TRENCH DRAINS: ☒No ☐Yes ☐Unknown Location:
Discharge Point:
SUMP PUMPS: ☒No ☐Yes ☐Unknown Location:
Discharge Point:
STORM DRAINS: ☒No ☐Yes ☐Unknown Location:
Discharge Point:
OTHER: ☒No ☐Yes ☐Unknown Location:
Discharge Point:

Are any FLOOR DRAINS, TRENCH DRAINS, or SUMPS connected to an OIL/WATER SEPERATOR?
☒No ☐Yes ☐Unknown ☐NA Location:
Dates of Usage:

10. Is the Site serviced with PUBLIC or PRIVATE WATER SYSTEMS and DATES of Connection, if known?

Type	Date of Connection/Usage
☐Public	☒Unknown
☐ Well	☐NA

Are there, or were there ever any OBSERVATION or MONITORING WELLS located on-Site?
☐No ☐Yes ☒Unknown ☐NA
Location: Purpose: Dates of Usage/Installation:

11. Are ANY of the FOLLOWING located ON or ADJACENT TO the SITE? (Choose all that apply):

Type:	Location:	Type:	Location:
☐ Surface water		☐ Pits	
☐ Ponds		☐ Lagoons	
☒ Creek - Bull Creek is to the north of the site		☐ Drainage Ditch	
☐ Rivers		☒ Lakes - Southern portion of the site has a 15 acre lake	
☐ Unknown		☐ No	

12. What type of heating does this property CURRENTLY or PREVIOUSLY have, if any?
Choose all that apply and identify the associated building(s) and dates of connection if applicable.

Type	Date(s) of Connection/Usage	Type	Date(s) of Connection/Usage
☐ Natural Gas		☐ Oil	
☐ Propane		☐ Radiant	
☐ Coal		☐ Hot Water	
☒ Not Heated		☐ Unknown	
☐ Other (explain)			

If oil: How is/was the oil stored ☐ above ground storage tank ☐ underground storage tank (see Question 20)
Location:

13. Who Supplies ELECTRIC SERVICE to the Site?
☐ RG&E ☐ National Grid ☐ NYSEG ☐ Unknown ☒ NA
☐ Other:

14. What is the nature of SOLID WASTE Generated at the Site and Disposed of from the Site (including hazardous)? None

Type of Waste?	How is it stored?	Who collects the waste?

15. To the best of your knowledge, have you ever GENERATED or TRANSPORTED HAZARDOUS WASTE from the Site?
☒ No ☐ Yes ☐ Unknown (if Yes, please provide Manifests)
Explain:

16. Do you TREAT or DISPOSE of any WASTE MATERIALS on-Site? (i.e., land filling, neutralization, incineration)
☒ No ☐ Yes ☐ Unknown
Explain:

17. Has any OTHER ENTITY ever been allowed to DUMP, STORE, DISPOSE, TRANSPORT, BURY, INCINERATE, OR LANDFILL any materials at the Site? ☒ No ☐ Yes ☐ Unknown

Who?	What?	When?	Location:

18. Has FILL DIRT been brought onto the Site from an UNKNOWN ORIGIN OR CONTAMINATED SITE?
☐ No ☐ Yes ☒ Unknown
Explain:

19. Are there areas of the Site in which the any of the following were or are located? ☐ Unknown ☐ No

Type:	Location:	Type:	Location:
☐ Gravel		☐ Debris	
☐ Construction Materials		☒ Tree/Brush - Throughout	
☐ Other (explain):			

20. Are there CURRENTLY or PREVIOUSLY any ABOVE (AST) or UNDERGROUND (UST) STORAGE TANKS located at the Site?
☒ No ☐ Yes ☐ Unknown Are they REGISTERED with the NYSDEC? ☐ No ☐ Yes ☐ Unknown

Tank Type (AST/UST)	Capacity (Gallons)	Product	Installation Date	Removal/Closure Date

Are there any LEAK DETECTION DEVICES in place? ☐No ☐Yes ☐Unknown
Explain:

Have any TANKS been: ☐Unknown ☐No Date(s):
☐REMOVED from the Site
Explain:

☐CLOSED in place at the Site
Explain:

Is DOCUMENTATION Available? ☐No ☐Yes ☐Unknown Please provide copy.

Has any CONTAMINATION been identified or REMEDIATION been required at the Site; related to CURRENT OR PRIOR TANKS? ☐No ☐Yes ☐Unknown
Explain:

21. What type of CHEMICALS are CURRENTLY or have PREVIOUSLY been STORED or UTILIZED on Site? None according to NYSDEC
Type: Usage: Storage Container: Disposal Method:

Are MSDS sheets readily available for these chemicals? ☐No ☐Yes ☐Unknown (if Yes, please provide copies)

22. Have there been any SPILLS, UNPERMITTED DISCHARGES, or RELEASES of HAZARDOUS or CONTAMINATED MATERIALS or PETROLEUM PRODUCTS at or in the vicinity of the Site? ☐No ☒Yes ☐Unknown
What? When? Location:
The adjoining property to the south is classified as a New York State Class 4 State Superfund Site listed as Frontier Chemical - Pendleton with a Site Code of 932043.

23. Are you AWARE if the SITE is listed as any of the following –Check all that Apply: ☐No
(please provide information for 'yes' responses)
Regulatory Listing: Explain:
☐National Priority or Delisted Priority List
☐CERLCIS Site
☐CERCLIS NFRAP Site
☐RCRA Generator Facility
☐RCRA Treatment/Storage/Disposal Facility
☐State or Local Landfill
☐National Response Site
☐NYSDEC Spill Site
☒Hazardous Waste Disposal Site - Adjacent property is listed as a Class 4 State Superfund Site. The on-site 15 acre lake was removed from the Superfund boundary by the NYSDEC in October 2013.
☐Brownfield or Voluntary Cleanup Site
☐Institutional or Environmental Control Site
☐Hazardous Substance Site

24. To the best of your knowledge, do you have any FEDERAL, STATE, or LOCAL PERMITS for the following?
☒None ☐Air Emissions ☐SPDES (waste water discharge)
Explain:

25. Has the Site ever been the subject of an ENFORCEMENT ACTION by any FEDERAL, STATE, or LOCAL agency regarding ENVIRONMENTAL ISSUES? ☐No ☒Yes ☐Unknown

Explain and provide DATES and any Documentation:
Adjacent property is listed as a Class 4 State Superfund Site. The on-site 15 acre lake was removed from the Superfund boundary by the NYSDEC in October 2013.

26. Is the Site presently under any FEDERAL, STATE, or LOCAL CONSENT ORDERS, DECREES, or CAUSE of ACTION?
☒No ☐Yes ☐Unknown
Explain and provide DATES and any Documentation:

27. Are you aware of any ENVIRONMENTAL LIENS on the Site? ☒No ☐Yes ☐Unknown
Explain:

28. Are you aware of any LAND USE or ACTIVITY LIMITATIONS that are in place on the Site or have been FILED or RECORDED in a registry? ☐No ☐Yes ☒Unknown
Explain:

29. Are you aware of any KNOWLEDGE or INDICATORS related to the Site that point to the PRESENCE or LIKELY PRESENCE of CONTAMINATION? ☐No ☐Yes ☒Unknown
Explain:

30. Are you aware if the PURCHASE PRICE of this Site reasonably reflects the fair market value of the property?
☐No ☐Yes ☐Unknown ☒NA (Site is not being sold at this time)
Explain:

31. Has there ever been PREVIOUS Phase I Environmental Site Assessments or environmental audits performed for the Site?
☐No ☒Yes ☐Unknown (if Yes, please provide copies if possible)
If yes, by Whom? Date?
Concerns identified: ☐No ☐Yes ☒Unknown
Explain: Site was previously investigated by the NYSDEC

32. Is the ABSTRACT OF TITLE for the Site available? ☐No ☐Yes ☒Unknown
(If Yes, please provide if possible or provide name and contact information for attorney that may have report)

33. Do you have any additional information or specialized knowledge or experience regarding the Site?
☒No ☐Yes ☐Unknown
Explain:

Amy Fisk
Signature

Amy Fisk
Print Name

12/11/13
Date

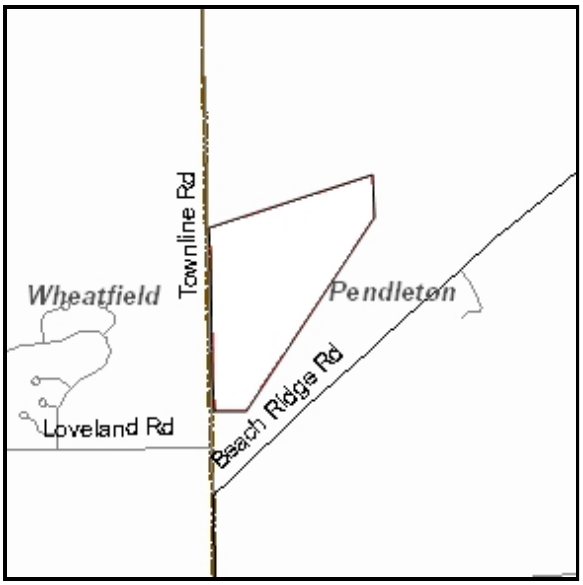
LABELLA Associates, P.C. | Engineering Architecture Environmental Planning

APPENDIX 6

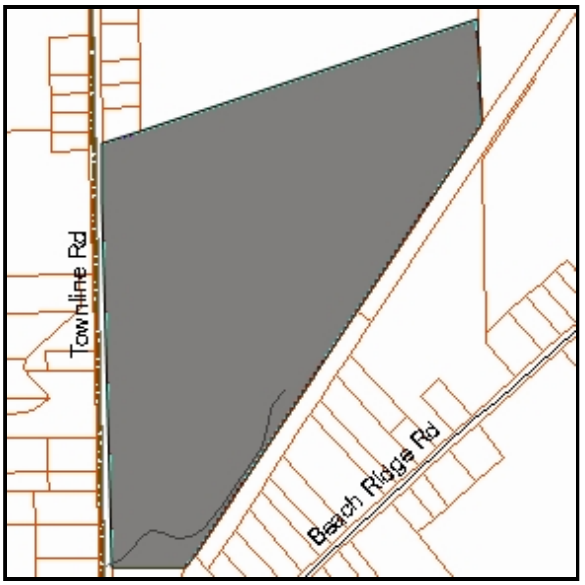
Local Government Records

Niagara County On-Line Mapping System
Parcel Detail Report

Address: Townline Rd
SBL: 164.00-3-36
Report generated: 11/25/2013 12:28:19 PM



Parcel Overview Map



Parcel Detail Map

PIN: 164.00-3-36
SBL: 1640000003036000
Address: Townline Rd
Municipality: 293200 - Pendleton
Owner: Frontier Chemical
Frontage:
Depth: 0
Acreage: 71.4
Property Class: 330
Total Assessment: $25,900
Land Assessment: $25,900
School District Code: 293201
School District Name: STARPOINT (S)
XY-Coordinates: 1084848 , 1126197
Deed Book:
Deed Page:
Sale Date:
Sale Price: 0
Sqft Living Area: 0
Grade: **Condition:**

Year Built: 0
Building Style:
Districts:
- **Agricultural:**
- **County Sewer:** CS320, CS322
- **Drainage:**
- **Fire:** FD321
- **Fire Protection:**
- **Firemans Retirement Area:**
- **Gas Lighting:**
- **Light:**
- **Paving:**
- **Refuse:** RD291, RD321
- **Road Improvement:**
- **Sewer:**
- **Special Parking:**
- **Sewers:**
- **Storm Water:**
- **Village Sewer:**
- **Water:** WD321, WD324

LANDMAX

Main Record

11/25/2013

Tax ID	Owner	Print Key	
164.000-0003-036.00000	FRONTIER CHEMICAL	164.00-3-36	
Street Address	**Co Owner**	**Municipality**	**SWIS CODE**
TOWNLINE RD	PROCESS INC	Town of PENDLETON	293200
Mailing Address	**Subdivision / Cross Street**	**Property Description**	
4626 ROYAL AVE		COML VACANT	
NIAGARA FALLS, NY 14303		**Use Code** 330	

Year Built	0	**Heat**		**# of Bedrooms**	0.0	**Sq. Footage**	0	**# of Stories**	0
House Type		**Fuel**		**# of Baths**	0.0	**1st Floor SQFT**	0	**# Res. Units**	0
Basement		**Water**	PUBLIC			**2nd Floor SQFT**	0	**# of Buildings**	0
Exterior		**Sewer**	NONE	**# of Fireplaces**	0	**Base SQFT**	0	**# of Garages**	0
		Central Air						**Story Height**	0

Assessment	$25,900	**School**	STARPNT	**North**	1126197
Land Value	$25,900	**School Tax**	$554.78	**East**	1084848
Equalization Value 100%	$26,701	**City Tax**	$0.00	**Latitude**	43.0906268
Account #	0	**County Tax**	$265.73	**Longitude**	-78.820858

Improvements

	Improvement Type	Dimensions	SQ. Feet	Year		Improvement Type	Dimensions	SQ. Feet	Year
# 1	SHED,FINISHD	255 X 1	255	1920	**# 3**		0 X 0	0	
# 2		0 X 0	0		**# 4**		0 X 0	0	

Land Characteristics

Total Acres 71.40 **Land SQ FT** 3,110,184 **Lot Size** 0 X 0

Primary	2.00	**Secondary**		**Leased**	71.40	**Undeveloped**		**Wooded**	19.40
Wetlands		**Water Front**		**Residual**		**Tillabe**		**Pasture**	
Waste	50.00	**Muck**		**Orchards**		**Vineyards**		**Rear**	

Sales History

Grantor	Sale Price	Sale Date	Deed Book	Deed Page	Deed Valid	Deed Type	ARMS Length
		/ /					

Notes

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LABELLA Associates, P.C.

300 State Street, Suite 201, Rochester, NY 14614

Phone 585.454.6110
Fax 585.454.3066
www.labellapc.com

Company: Town of Pendleton
Attention: Town Clerk
From: Chris Kibler
Re: FOIL Request
Date: 11/25/13 **Project Number:** 214058
Fax Number: (716) 625-6295 **Phone Number:** (716) 625-8833

We are transmitting 2 pages, including this cover sheet.

MESSAGE: Please see attached

These items are transmitted as checked below:

X For Your Use ☐ As requested X For Review and Comment
☐ Originals will be mailed ☐ Originals will not be mailed

If there is a problem with this transmittal please call as soon as possible. Thank you

Signed: Chris Kibler

TOWN OF PENDLETON
6570 Campbell Blvd.
Lockport, N.Y. 14094
716-625-8833

Request for Public Access to Records

Date: 11/25/2013

I wish to inspect the
as possible.)

_____
_____
_____
_____

Assessment Records
Records of Environmental Concerns, issues, or violations
Building Inspection Records
Records of Tank installation, permits, removals, or closures
Fire Marshal Records
Records of Fires at the Site
Code Enforcement Records
Records of leaks or spills
Solid Materials
Records of soil or groundwater contamination/cleanup or on-Site remediation
Waste Disposal Records

You may inspect documents first and then ask for copies of the ones you actually want.
The cost of each copy is $.25.

Name: Chris Kibler
Address: LaBella Associates, D.P.C.
300 Pearl Street, Suite 325
City/State/Zip Buffalo, New York 14202
Phone # 716-873-2115

Unaddressed Parcel at Townline Road
SBL No. 164.00-3-36

Signature: _____

==========

Date Completed: _____

Photocopies: # _____ Charge: _____

DENIED (for reasons checked below)

_____ Exempted by statute other than Freedom of Information
_____ Unwarranted invasion of personal privacy
_____ Would impair contract awards or collective bargaining agreements
_____ Would endanger the life or safety of any person
_____ Interagency or intra-agency materials
_____ Record is not maintained by this agency
_____ Record of which this agency is legal custodian cannot be found
_____ Other _____

Any person denied access to records may appeal within 30 days of the denial. Such appeals should be addressed to the Supervisor of the Town of Pendleton.

Local Municipality Information

Conducted by: Chris Hibbs Date: 11-26-13 at offices
Location:
Address (of project): unaddressed parcel @ Tanline Rd., Pendleton, N.Y.
Project Number: 24058

Assessor: ☐ Not Applicable ☐ Not Available ☐ Submitted FOIL ☐ Left Message ☐ Received Response ☐ Received Response

Tax Account #: 164.00-3-36

Property Size (acres): 71.4 acres

Current Owner: Frontier Chemical

Previous Owners and Dates:

Current Use:

Saline leaded land

Prior Uses:

Leaded land, part of chemical waste processing plant

Construction date:
Square Footage:
Utilities:

-All public

Other:

1920-metal shed

B.D.

- no files of concern

Clerk

- pulled files from basement, info. already submitted by NCDED

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LABELLA Associates, P.C.

300 State Street, Suite 201, Rochester, NY 14614

Phone 585.454.6110
Fax 585.454.3066
www.labellapc.com

Company:	Niagara County Department of Health		
Attention:	Records Access Officer/County Clerk		
From:	Chris Kibler		
Re:	Freedom of Information Act Request – Health Information		
Date:	11/25/13	**Project Number:**	214058
Fax Number:	(716) 439-7124	**Phone Number:**	

We are transmitting 2 pages, including this cover sheet.

MESSAGE: FOIL Request Attached.

These items are transmitted as checked below:

X For Your Use ☐ As requested X For Review and Comment
☐ Originals will be mailed ☐ Originals will not be mailed

If there is a problem with this transmittal please call as soon as possible. Thank you

Signed: Ch. Ki

APPLICATION FOR PUBLIC ACCESS TO RECORDS

"Freedom of Information Law" (FOIL) Request

NIAGARA COUNTY LEGISLATURE

Niagara County Courthouse, 175 Hawley Street
Lockport, NY 14094-2740

TO: RECORDS ACCESS OFFICER **DATE:** 11/25/13

DEPARTMENT (DIVISION): Environmental

NAME (Please Print) Mr. / Mrs. / Ms. / Miss: Mr. Chris Kibler **PHONE NUMBER** (716-873-2115

BUSINESS NAME (For Niagara County employees, name of employing agency): LaBella Associates, P.C.

MAILING ADDRESS: 300 Pearl Street, Suite 325, Buffalo, NY 14202

I wish to inspect the following record(s): (PLEASE FULLY IDENTIFY)

Please see attached FOIL request.

SIGNATURE:

STOP HERE - FOR OFFICE USE ONLY

☐ APPROVED - You may see and/or copy this (these) record(s) as follows:
DATE: _____ TIME: _____ PLACE: _____

☐ DENIED - For the reason(s) checked below:

- ☐ Confidential disclosure
- ☐ Part of investigatory files
- ☐ Unwarranted invasion of personal privacy
- ☐ Record is not maintained by this agency
- ☐ Exempted by statute other than the Freedom of Information Law
- ☐ The Freedom of Information Law does not provide access to this information
- ☐ Primary source of information is _____
- ☐ Record to which this agency is legal custodian cannot be found
- ☐ Other (specify) _____

_____ _____
SIGNATURE (Records Access Officer) DATE

Price Per Copy:	Received By:
Number of Copies:	Amount Received:
Amount Due:	Cash / Check / Money Order No:

NC.21 2003

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LABELLA Associates, P.C.

300 State Street, Suite 201, Rochester, NY 14614

Phone 585.454.6110
Fax 585.454.3066
www.labellapc.com

November 25, 2013

The Niagara County Dept. of Health
5467 Upper Mt. Rd.
Lockport, NY 14094

Re: Foil Request
Owner: Frontier Chemical
Unaddressed Parcel at Townline Road (Does not include 11-acre landfill portion of parcel)
Pendleton, New York
Tax ID #164.00-3-36
LaBella Project No. 214058

To whom it may concern:

Please accept this letter as a formal request to the following Niagara County Department of Health records for review/copies of department records for the above referenced property, if available.

- ✓ Environmental Enforcement
- ✓ Environmental Permits
- ✓ Environmental Remediation
- ✓ Hazardous Materials
- ✓ Solid Materials
- ✓ Health Records
- ✓ Air
- ✓ Law Enforcement/Investigations
- ✓ Legal
- ✓ Water
- ✓ Spills
- ✓ Fires

Please contact me at (716) 873-2115 or ckibler@labellapc.com with any questions or require additional information.

Thank you for your assistance in this matter.

Respectfully submitted,

LABELLA ASSOCIATES, P.C.

Chris Kibler
Environmental Analyst

NIAGARA COUNTY DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH DIVISION
5467 Upper Mountain Road, Suite 100
Lockport, New York 14094-1894

(716) 439-7444
(716) 439-7427 FAX

November 27, 2013

Chris Kibler, Environmental Analyst
LaBella Associates P.C.
300 State Street, Suite 201
Rochester, NY 14614

Re: Foil Request
Frontier Chemical
LaBella Project No. 214058

Dear Mr. Kibler:

The above FOIL requests have been approved. Please call me at 716-439-7595 for an appointment to review the files.

Very truly yours,

Paul R. Dicky, P.E.
Supervisory Public Health Engineer

PRD/dmc
Enc.

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LABELLA Associates, P.C.

300 Pearl Street, Suite 325, Buffalo, NY 14202

Phone 716-551-6281
Fax 716-551-6282
www.labellapc.com

November 25, 2013

New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203-2999

Re: Foil Request
Unaddressed parcel at Townline Road (Does not include 11-acre landfill portion of parcel)
Pendleton, New York
Owner: Frontier Chemical
SBL No. 164.00-3-36
LaBella Project No. 214058

Dear Sir or Madam:

Please accept this letter as a formal request to the following NYSDEC Departments for review/copies of department records for the above referenced property, if available.

- ✓ Environmental Enforcement
- ✓ Environmental Permits
- ✓ Environmental Remediation
- ✓ Hazardous Materials
- ✓ Solid Materials
- ✓ Land Use Restrictions including Institutional and/or Engineering Controls
- ✓ Air
- ✓ Law Enforcement/Investigations
- ✓ Legal
- ✓ Water
- ✓ Spills/Petroleum Bulk Storage
- ✓ Brownfields Cleanup Program or Voluntary Cleanup Program

Please call me at (716) 768-4906 or (ckibler@labellapc.com) with any questions or if you require additional information.

Thank you for your assistance in this matter.

Respectfully submitted,

LABELLA ASSOCIATES, P.C.

Chris Kibler
Environmental Analyst

New York State Department of Environmental Conservation
Office of General Counsel, Region 9
270 Michigan Avenue, Buffalo, New York 14203-2915
Phone: (716) 851-7190 • **Fax:** (716) 851-7296
Website: www.dec.ny.gov

Joe Martens
Commissioner

November 26, 2013

Christopher Kibler
LaBella Associates, P.C.
300 Pearl Street, Suite 325
Buffalo, NY 14202

Dear Mr. Kibler:

This letter acknowledges receipt of your request dated 11/25/2013 for access to records relative to:

R9-13-456 Frontier Chemical Townline Rd., Pendleton (does not include 11 acre landfill portion of parcel)

Your request has been forwarded to the appropriate individual programs within DEC.

To assist you in obtaining information, many records can be immediately accessed through the Department's website www.dec.ny.gov. The following links provide information commonly requested of the Department:

- DEC Permit Application Data www.dec.ny.gov/cfmx/extapps/envapps
- Spills, Tanks and Remedial Site Database Search www.dec.ny.gov/chemical/8437.html
- Mapping Gateway www.dec.ny.gov/pubs/212.html
- Hazardous Waste Facility information & EPA ID numbers www.epa.gov/enviro/facts/rcrainfo/search.html
- Hazardous Waste Facility Inspection & Enforcement records www.epa-echo.gov/echo/compliance_report_rcra.html
- Toxic Release Inventory www.epa.gov/tri/tridata/

If your record request is for undeveloped property, the Department recommends using the Environmental Resource Mapper www.dec.ny.gov/animals/38801.html to determine the location of both freshwater wetlands regulated by the State of New York and New York State's classified streams and water bodies. If your request did not specify records on wetlands or other environmental resources, the Department search may not include information on environmental resources that are state protected.

Following the necessary file search, you will be contacted as to whether such records are in our custody. If all records are not provided because the records are excepted from disclosure, you will be notified of the reasons and of your right to appeal the determination.

Due to the large volume of requests we receive, you may expect a reply by 12/24/2013.

Sincerely,

Peter Grasso
Regional Enforcement Coordinator

New York State Department of Environmental Conservation
Office of General Counsel, Region 9
270 Michigan Avenue, Buffalo, New York 14203-2915
Phone: (716) 851-7190 • **Fax:** (716) 851-7296
Website: www.dec.ny.gov

Joe Martens
Commissioner

December 18, 2013

Christopher Kibler
LaBella Associates, P.C.
300 Pearl Street, Suite 325
Buffalo, NY 14202

Dear Mr. Kibler:

R9-13-456 Frontier Chemical Townline Rd., Pendleton (does not include 11 acre landfill portion of parcel)

Your request of 11/25/2013 has been reviewed for the above referenced records under the New York State's Freedom of Information Law (FOIL). Please note that most of our records are filed by names of individuals or corporations. We have no way of locating or retrieving records if they are filed under names or addresses other than those who have provided. If no records have been located, this does not necessarily mean, and should not be interpreted to mean that there have never been any violations, complaints, claims, investigations, or inquiries involving those names or addresses. We cannot make any representations as to whether there are or have been any such violations, complaints, claims, investigations, or inquiries.

Responsive records will be available for your inspection/photocopying until 1/15/2014 after which time the documents will be returned to the files and the request will be considered closed.

The arrow below indicates the response for your particular request.

► **Please call the following individual(s) from our office ahead of time to schedule an appointment to review and/or copy the files that have been found responsive to your request.**

UNIT	SIZE	CONTACT	PHONE
RCRA	Old RCRA files	Nelson Schnabel	851-7220

☐ After a diligent search, no records could be located for the names and/or addresses you provided.

Please note some records, or parts of records, may be exempt from disclosure. Article 6 of the New York State Public Officers Law, Section 87, includes nine conditions for denial of access. At the time of your records inspection, the individuals listed above will advise you if any records are denied and of your right to appeal that decision.

There is no charge to review records or for copies of seven or fewer pages. By law, copy charges will not exceed 25 cents per page or the actual cost of copying. Photographs, maps, oversized documents, videotapes, or audio tapes generally cost more than 25 cents per page to copy. You may be required to pay a deposit prior to copies being made and/or to pay all copy charges prior to copies being sent.

Depending on the volume of copies requested, you may have to use an outside copy service to make the copies.

Sincerely,
Julie Foster
Secretary 1

LABELLA Associates, P.C. | Engineering Architecture Environmental Planning

APPENDIX 7

User Interview

LABELLA
LaBella Associates, P.C.

300 State Street, Suite 201
Rochester, New York 14614-1098
Phone: (585) 454-6110
FAX: (585) 454-3066

USER QUESTIONNAIRE

Project No. 214058 Date: 12/11/13
Site Name/ Address: Unaddressed Parcel at Townline Road (SBL No. 164.00-3-36), Pendleton, New York; Site does not include 11-acre landfill portion of overall 71-acre parcel

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "*Brownfields Amendments*"), the *User* must provide the following information (if available to the *Environmental Professional.* Failure to provide this information could result in a determination that "*all appropriate inquiry*" is not complete.

User (Print Name): Amy Fisk
Title: Senior Planner
Signature: Amy Fisk

Information regarding these questions were obtained from the following parties (if applicable): N/A

Purpose of this Assessment:
☐Selling the property ☐Purchasing the property ☐Construction loan
☐Re-financing the property ☒Other (explain): Determine environmental conditions of the property prior to Niagara County involuntarily acquiring the property via tax foreclosure

Title Records
Land title records and lien records are filed under federal, tribal, state or local law and should be reviewed to Identify environmental liens or activity and use limitations, if any, that are currently recorded against the property.
Are land title records available for review? ☐No ☐Yes (If yes, please provide.) ☒Unknown

Environmental cleanup liens that are filed or recorded against the Site (40 CFR 312.25)
Are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal law?
☐No ☐Yes ☒Unknown
Based on review of readily available information:

Activity and land use restrictions that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.25)
Are you aware of any AULs, such as *engineering controls,* land use restriction, or *institutional* controls that are in place at the Site and/or have been filed or recorded in a registry under federal, tribal, state, or local law?
☐No ☐Yes ☒Unknown
Based on review of readily available information

Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28)
As the *User* of this *ESA* do you have any specialized knowledge or experiences related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or and adjoining *property* so that you would have specialized knowledge of the chemicals and processes used by this type of business?
☒No ☐Yes ☐Unknown
Based on review of readily available information:

5. **Relationship of the purchase price to the fair market value of the *property* if it were not contaminated (40 CFR 312.29)**

Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property?*

☐No ☐Yes ☐Unknown ☒N/A- there is no transfer of ownership

If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?

☐No ☐Yes ☐Unknown

Based on review of readily available information:

6. **Commonly known or *reasonably ascertainable* information about the *property* (40 CFR 312.30)**

Are you aware of any commonly known or *reasonably ascertainable* information about the *property* that could help the *Environmental Professional* to identify conditions indicative of releases or threatened releases? For example, as *User:*

(a) Do you know of the past uses of the *property?*

☐No ☒Yes ☐Unknown

Based on review of readily available information: The property was owned by Frontier Chemical Waste Processing who used a portion of the site for the treatment of industrial wastes.

(b) Do you know of specific chemicals that are present or once were present at the *property?*

☐No ☒Yes ☐Unknown

Based on review of readily available information: NYSDEC has extensive files on the chemicals formerly present at the site.

(c) Do you know of spills or other chemical releases that have taken place at the *property?*

☐No ☒Yes ☐Unknown

Based on review of readily available information: NYSDEC has extensive files on the chemicals formerly present at the site.

(d) Do you know of any environmental cleanups that have taken place at the *property?*

☐No ☒Yes ☐Unknown

Based on review of readily available information: NYSDEC has extensive files on cleanups that have occurred at the site.

7. **The degree of obviousness of the presence or likely presence of contamination at the *property,* and the ability to detect the contamination by appropriate investigation (40 CFR 312.31)**

As the *User* of this *ESA*, based on your knowledge and experiences related to the *property* are there any *obvious* indicators that point to the presence or likely presence of contamination at the *property?*

☐No ☐Yes ☒Unknown

Based on review of readily available information:

Please provide attachments if necessary to explain any answers to the above questions.

LABELLA Associates, P.C. | Engineering Architecture Environmental Planning

APPENDIX 8

Additional Documentation

Frontier Chemical
Townline Road
North Tonawanda, NY 14120

Inquiry Number: 3795494.3
December 5, 2013

The EDR Environmental LienSearch™ Report

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Environmental LienSearch™ Report

The EDR Environmental LienSearch Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EDR Environmental LienSearch™ Report

TARGET PROPERTY INFORMATION

ADDRESS

FRONTIER CHEMICAL
TOWNLINE ROAD
PENDLETON, NY 14120

RESEARCH SOURCE

Source 1: Niagara County, New York

PROPERTY INFORMATION

Deed 1:

Type of Deed: Other

Title is vested in: Frontier Chemical

Legal Description: **Attached as Deed Exhibit**

Legal Current Owner: **Frontier Chemical**

Property Identifiers: **164.00-3-36**

Comments: **An extensive search of the Niagara County Public Records Office was performed, and a deed vesting title into the subject property was not found of record. A copy of the county parcel summary has been attached for your review as Deed Exhibit.**

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

Other AUL's: Found ☐ Not Found ☒

COMMENTS:

EDR Environmental LienSearch™ Report

DEED EXHIBIT

Back to Search Results

Photo Unavailable.

GIS Maps

Google Maps - Street View

Show all Images

Parcel Summary

Assessment	
Total Assessment:	$25,900
Total Land Assmt:	$25,900
County Taxable Assmt: (Niagara)	$25,900
Town Taxable Assmt:	$25,900
School Taxable Assmt:	$25,900
Village Taxable Assmt:	$0
Equalization Rate:	97%
Full Market Value:	$26,701

Property	
Type:	Vacant Land
Use:	330 - Vacant comm
Frontage:	0
Depth:	0
Acres:	71.4

Subject Property	
Address:	TOWNLINE RD
SBL#	164.00-3-36
School District:	293201

Mapping

GIS Maps

Google Maps - Street View

Bing BirdsEye Map

Sales	
Sale Date:	No Sale Information
Sale Price:	
Useable:	
Deed Book:	
Deed Page:	

Structure	
Year Built:	0
House Style:	
Square footage:	
Bedrooms:	0
Baths:	0
Fire Places:	0
Stories:	0
Basement:	
Garage:	None ?
Garage Sqft:	0

Find Comparable Sales | Street Sales Report | Neighborhood Sales Report | Property Report

9-32-043

FRONTIER CHEMICAL-PENDLETON

Site No. 9-32-043

RECORD OF DECISION

Prepared by
New York State
Department of Environmental Conservation

MARCH, 1992

DECLARATION STATEMENT-RECORD OF DECISION

Frontier Chemical-Pendleton

Pendleton, New York

Site #9-32-043

STATEMENT OF PURPOSE

This Record of Decision (ROD) sets forth the selected Remedial Action Plan for the Frontier Chemical-Pendleton site. This Remedial Action Plan was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the New York State Environmental Conservation Law (ECL). The selected remedial plan complies to the maximum extent practicable with the National Oil and Hazardous Substance Pollution Contingency Plan, 40 CFR Part 300, of 1990.

STATEMENT OF BASIS

This decision is based upon the Record of the New York State Department of Environmental Conservation (NYSDEC) for the Frontier Chemical-Pendleton site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A copy of all pertinent documents is on file at the Lockport Public Library, 23 East Street, Lockport, New York. A bibliography of the documents included as a part of the Record is included in Appendix 1.

DESCRIPTION OF SELECTED REMEDY

The selected remedial action plan provides for the protection of human health and the environment by removing exposure to contaminants at the site. The Remedial Plan is technically feasible and it complies with statutory requirements. Briefly, the selected remedial action plan includes the following:

- a grouted sheetpile (or technical equivalent) will be installed around the site to provide a containment boundary for contaminated soils and assist the collection system in maintaining an inward gradient;

- a groundwater collection system will be installed within the contained area to maintain an inward gradient. The collected groundwater will be treated and disposed either on-site or off-site;
- contaminated sediments from Quarry Lake will be dredged, stabilized and placed on the site within the containment area. Previously dredged sediments stockpiled on-site will be similarly placed;
- a multilayered synthetic geomembrane (or technical equivalent) cap will be installed over the containment area;
- physical controls will be installed to control both surface drainage and overflow from the lake;
- a monitoring system will be installed to monitor the effectiveness of the remedy.

DECLARATION

This selected Remedial Action Plan is protective of human health and the environment. The remedy selected will meet the substantive requirements of Federal and State laws, regulations and standards that are applicable or relevant and appropriate to the remedial action. The remedy will satisfy, to the maximum extent practicable, the preference for remedies that reduce toxicity, mobility or volume. This preference will be met by containing the contaminants within the process/fill area and by dredging and stabilizing the sediments from Quarry Lake. The potential long term environmental and human health threats associated with the site will be significantly reduced by removing the exposure to contaminants at the site.

3-2-92

Date

Edward O. Sullivan
Deputy Commissioner
Office of Environmental Remediation
New York State Department of
Environmental Conservation

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Section 1 - Site Location & Description

The Frontier Chemical-Pendleton site is located on Townline Road in the Town of Pendleton, Niagara County, New York. This inactive site is currently listed as site number 9-32-043 on the registry of Inactive Hazardous Waste Disposal Sites in New York State. The site as listed is approximately 22 acres in size. The area evaluated during site investigations is approximately 75 acres in size and is bounded by Townline Road to the west, an abandoned railroad right-of-way to the southeast and Bull Creek to the north (see Figures 1 and 2). A lake approximately 15 acres in size (Quarry Lake, a former clay quarry) is located in the south-central portion of the site. The area around the site is residential/agricultural. The nearest residences are located less than 100 feet from the site. There is one drinking water well located more than 900 feet from the site.

Section 2 - Site History

The site was originally used as a clay brick and tile manufacturing facility. Frontier Chemical Waste Process, Inc. (Frontier), obtained the property and operated the site as an industrial waste treatment facility from 1958 to 1974. The waste treatment involved lime neutralization of plating wastes, pickle liquors and other liquid acid wastes from the plating and metal finishing industries. The treatment operations were carried out in the process area of the site, between Quarry Lake and the abandoned railroad. Resulting mixtures from the waste treatment process were discharged into Quarry Lake for settling of the neutralization products. Other operations performed at the site included chemical oxidation, chemical product recovery, incineration and distillation. Various drummed and tanked wastes were stored on-site for transfer. Much of the process area was filled and graded following termination of the waste processing and treatment operations between 1974 and 1977.

In 1980, two retention ponds were constructed for the rehabilitation of Quarry Lake. This was accomplished by batch-treating lake water in the ponds with a 50% caustic solution and discharging (via a direct pipeline) the resultant liquid to

the Town of Wheatfield Sewage Treatment Plant. The use of the ponds ceased in the mid-1980s.

In 1987 remedial work commenced on the sludges in Quarry Lake. The sludges were to be placed in a naturally clay-lined landfill in the southwest corner of the lake. The lake was drained and the sludges from the southern basin were dredged and stockpiled along the shores. The work stopped in 1988 when an oily, chemical-smelling leachate from the area of the old brick plant began filling the excavation. Seepage was reduced by the construction of a temporary clay cutoff wall. No further remedial work was performed at the site.

Section 3 - Current Status

A Remedial Investigation (RI) was performed at the site in 1990-91 by URS Consultants for the New York State Department of Environmental Conservation (NYSDEC). The results and findings of the RI, for each aspect of the site, are outlined below.

A. Soil/Fill Contamination:

The source of contamination at the site is the 7.4-acre process/fill area south of Quarry Lake. This area contains metal sludge spoils, construction and demolition (C&D) debris and black, dry or sludge-like material. In addition, there are containers, tanks, railroad cars and pieces of equipment strewn throughout the area.

A number of organic and inorganic compounds were found in the soil in the process/fill area. Metals found at elevated levels (i.e., above 1 part per million (ppm)) included arsenic, cadmium, chromium, copper, lead and mercury. Chromium concentrations were highest in the area where lake sediments/metal sludge spoils had been deposited in the process area. The organic compounds included volatile organics, polyaromatic hydrocarbons (PAHs), chlorinated hydrocarbons, PCBs and pesticides. The highest concentration of organics was 1,635 ppm of the BTX (benzene, toluene, xylene) group of compounds. (See Table 1 for soil/fill data)

In general, contamination is limited to the process/fill area and has not spread appreciably to the surrounding soil. Based on the soils analysis, the process area can be divided into distinct sub areas, depending on the type and level of contamination. These sub areas would be the "hot spot area" and "non-hot spot area" (see Figure 3).

B. Quarry Lake Water:

Quarry Lake is a water-filled, man-made excavation. The lake is underlain by a layer of low-permeability clay. In some areas the clay layer may be thin or nonexistent where excavations for the lake were the deepest. The volume of water in the lake is 37 million gallons. Groundwater from the process area flows into the lake at less than 20 gallons per day (gpd). A water balance for the lake is shown on Figure 4. The lake is classified as Class D.

Results of analysis performed on Quarry Lake water show that the lake water is relatively uncontaminated. A few organic contaminants were detected at low levels (1,2 dichloroethene and toluene at 4 parts per billion (ppb)). (See Table A-3 for the analytical results) These concentrations do not exceed the water quality standards for a Class D water body. The metal concentrations are also low, with only iron exceeding the water quality standard for a class D water body.

C. Quarry Lake Sediments:

The sediments in Quarry Lake are contaminated primarily with inorganic compounds but also contain some low levels of various organics. The lake is divided by the remnants of a berm constructed in the mid-1980s into northern and southern basins (see Figure 3). The southern basin was dredged in 1988 and the dredge spoils were deposited on the process area. The concentration of metals is higher in sediments of the northern basin. Sediments in this basin have not been dredged. These sediments contained elevated concentrations of cadmium, chromium and cyanide. The highest concentrations of cadmium and total chromium are 86.9 and 1,100 ppm respectively. (See Table 2 for sediment data)

D. Bull Creek

Water and sediment samples were taken from Bull Creek, a Class C stream along the northern border of the site. A total of seventeen organic compounds were found in the water samples; however, thirteen of these were detected only in the upstream sample. All compounds were found at levels of 26 ppb or less. The water quality standards for eight of these compounds were exceeded in these samples. Eleven organic compounds, mostly PAHs, were detected in the stream sediment samples. Although these compounds were found on site, they may be attributable to an off-site source (i.e., Townline Road and/or the railroad ROW). A benthic survey, performed during the RI, indicated that the overall impact of the site on the water quality of Bull Creek is negligible.

E. Groundwater:

Three principal hydrologic units were defined at the site. These are an upper water-bearing zone, a clay confining unit (intermediate water bearing zone) and a lower aquifer. Groundwater in the upper water-bearing zone is perched and appears to flow in a radial pattern away from the process area. The horizontal flow is of low volume. Numerous organic contaminants were detected in the groundwater within the upper zone in the process area. The compounds of greatest significance, due to their frequency and concentration, were chlorinated hydrocarbons and BTX compounds. The highest BTX compounds concentration found in this zone was toluene at 260 ppm. The highest chlorinated hydrocarbon was dichloroethane, at a concentration of 243.6 ppm. Concentrations of these organic compounds exceeded ground water standards. The concentrations of many metals and cyanide from wells within the process area also exceeded groundwater standards. Wells screened in the upper zone and located outside the process area were free of organic compounds. These wells did contain low levels of inorganic compounds, such as iron and chromium, at concentrations in excess of water quality standards.

Within the clay confining unit, groundwater flow is generally vertical and downward. There is almost no horizontal component of groundwater flow in this unit due to the low hydraulic conductivity of the clay (on the order of 1 E-8 cm/sec). The maximum concentration of organics within this unit was

tetrachloroethene at 14 ppb; however, the concentration exceeded groundwater standards. The most contaminated well within this unit, located within the process/fill area hot spot, had a total organics concentration of 288.9 ppb. In addition, concentrations of antimony, iron, magnesium and manganese exceeded groundwater standards. These organic and inorganic compounds were found in the groundwater within the process/fill area. The groundwater in wells outside this area did not exceed the groundwater quality standards. In the residential area around the site there are no wells in use at this depth. There is no potential for exposure to the low levels of contaminants in the water in the unit.

In the lower aquifer organics were detected at levels generally much lower than that found within the upper water bearing zone.. The concentration of acetone (a volatile organic) was the highest at 250 ppb. Concentrations of all other organics were less than 50 ppb; however, these concentrations exceeded groundwater standards. Several metals were also detected within this unit; however, the concentrations did not exceed the background levels found.

All three units are contaminated; however, most of the contamination is within the upper water-bearing unit in the process area. (See Table 3 for groundwater data) The groundwater is apparently being contaminated by contact with chemicals in the process area and the lake sediments. Fortunately, the upper water bearing zone transmits water only very slowly and contaminated groundwater has been confined to the area near the process area. Most of the local residents are served by a municipal water supply system. The closest well used for drinking water purposes is located more than 900 feet from the site. Water from the well was sampled and analyzed and found to be free of contaminants. A monitoring well was installed between the site and the general location of this drinking water well. No contaminants were detected in samples from the monitoring well.

F. **Risk Assessment**:

A baseline human health risk assessment was performed as part of the RI. The purpose of this assessment was to determine the potential impact of

contamination at the site in the absence of remedial measures. The assessment determined the cancer risk probabilities for carcinogenic compounds and the chronic risk hazard indices for non-carcinogenic compounds due to exposure from the site. Potential risks to site users were determined for the following scenarios: nearby residents exposed through inhalation of vapors or fugitive dust; trespassers exposed through ingestion of surface soils, inhalation of vapors or fugitive dust and dermal absorption of surface soil and near surface groundwater. The risks for future users, both residents and trespassers, of the site, in the absence of remedial action were also evaluated. (See Table 4 for the summary of risks)

The risk assessment indicates that under existing (i.e., no action) site conditions for the population use scenarios cited above, the site does not pose an unacceptable carcinogenic risk as defined by the U.S.E.P.A. remediation guideline of 1.0 E-04 to 1.0 E-06 probable risk range. (Note: 1.0 E-06 means one additional cancer per one million people and 1.0 E-04 means one additional cancer per 10,000 people, over their lifetimes) The total risk to residents near the site is 2.12 E-06 (i.e., 2.12 additional cancers per one million people exposed to present site conditions per the scenarios cited above. This total risk is well within EPA's guidelines).

On the other hand the chronic (non-carcinogenic) risks were found to be significant. In two out of three no-action scenarios the total hazard index exceeds an index value of one (1). (The resident value is 12.6 and the resident/trespasser value is 13.1) Chromium and cadmium are the primary source of this risk. U.S.E.P.A. guidance recommends that, at this level, consideration should be given to mitigating site conditions.

Section 4 - Enforcement Status

In September 1984 the NYSDEC and Frontier executed an administrative Consent Order (Consent Order No. 84-118) which provided for Frontier's implementation of a site closure plan. The Consent Order called for Frontier to pump water from Quarry Lake, revise the closure plan to respond to deficiencies identified by NYSDEC, and commence implementation of the closure plan. Frontier violated the Order by failing to pump water from Quarry Lake within the specified time frame,

failing to revise the closure plan as specified by NYSDEC, and failing to implement the closure plan.

Because of Frontier's violations of Consent Order No. 84-118, another Consent Order (No. 85-135) was executed. This Consent Order required Frontier to perform a field investigation of the site and implement the Remedial Action Plan for the closure of Quarry Lake. Frontier violated this Consent Order by failing to complete the field investigation in accordance with the schedule set forth in the Order. Further, Frontier did not complete the Remedial Action Plan for closure.

In March 1988, Consent Order No. 87-91A was executed between NYSDEC and Frontier. This Consent Order called for Frontier to initiate and complete the actions required under Consent Order No. 85-135 (i.e., the site field investigation and closure of Quarry Lake). Frontier violated this Order by not completing the field investigation within the time frames established in the Order. Further, Frontier did not complete the closure of Quarry Lake.

Frontier has failed to abide by the terms of three separate Consent Orders for this site. For this reason, the NYSDEC performed the Remedial Investigation/Feasibility Study (RI/FS) with money from the State Superfund. When the Record of Decision (ROD) is issued for this site, Frontier will be given the opportunity to perform the remediation required by the ROD. If Frontier is unable or unwilling to perform the remediation, NYSDEC will implement the remediation, using State Superfund monies. Frontier, or their successors, will be required to reimburse NYSDEC for the amount spent on the RI/FS and remediation.

Section 5 - Goals for the Remedial Actions

The Frontier Chemical-Pendleton site is located in an agricultural/residential area. There are homes located less than 100 feet from the site. The presence of contaminated sludge piles raises the possibility of human contact with wind borne contaminated soils. Present or future use of the unremediated site poses a potential for human exposure to contaminants and a chronic health risk. The remedial action implemented must eliminate the potential for exposure to the chemical wastes at the site.

The following remedial action objectives have been established for the Frontier Chemical-Pendleton site:

1. Reduce or eliminate the potential for human contact with contaminated soil, fugitive dust, groundwater, sediment and surface water.
2. Dispose of, or otherwise treat the wastes in a manner consistent with all State and Federal Applicable or Relevant and Appropriate Requirements (ARARs).
3. Restore the site to a condition allowing use with few restrictions.

Section 6 - Description and Evaluation of the Alternatives

Remedial technologies ranging from no action to excavation and incineration, were evaluated in the Feasibility Study (FS) for the site. (See Table 5 for listing of technologies) These technologies were evaluated for each aspect of the site (i.e., process/fill, sediment, groundwater, surface water). The technologies were screened to determine those that were technically feasible, protective of human health and the environment and cost effective. The screened technologies were developed into alternatives for detailed evaluation. The alternatives are described below:

Alternative 1: "No Action" alternative involving no activities, short-term or long-term at the site.

Alternative 2: "Institutional Action" alternative involving installation of additional monitoring wells, long-term groundwater monitoring and site use/access restrictions.

Alternative 3a: "Containment" alternative, providing for a multilayered synthetic geomembrane cap and grouted sheetpile (or their technical equivalents), to contain the contaminated process/fill area; groundwater collection and treatment; and placement of untreated dredged sediments over the contaminated fill area under the cap. Other elements common to Alternatives 3 through 6 include physical controls (diversion of runon/runoff, control of lake discharge, berm closure and improveent to ditch on Townline Road to handle drainage), sediment dredging, additional monitoring wells and long-term groundwater monitoring. (See Figure 5)

Alternative 3b: This alternative is the same as Alternative 3a, except that the lake sediments will be solidified prior to placement over the site. (See Figure 5)

Alternative 4: "Hot Spot Treatment with Ex-Situ Solidification", involves ex-situ solidification of the hot-spot contamination area, sediment dredging, solidification and placement of lake sediments on the site, installation of a partial sheetpile along the lake, collection and treatment of groundwater entering the excavated areas and a soil cap. Common elements include physical controls, sediment dredging and groundwater monitoring. (See Figure 6)

Alternative 5: "Hot Spot Treatment with In-Situ Solidification", is similar to Alternative 4 and differs only in the method of treatment of the hot spot area. Alternative 5 involves in-situ solidification of the hot-spot contamination area, sediment dredging, solidification and placement of lake sediments on the site, a soil cap, and installation of a partial sheetpile along the lake. Physical controls, sediment dredging and groundwater monitoring are common elements. (See Figure 7)

Alternative 6: "Full Treatment with Solidification and Hot Spot Thermal Desorption" is a full soil/fill treatment option. The hot-spot area will be excavated and treated through thermal desorption to remove organic contaminants, while the non-hot-spot area undergoes in-situ solidification. Installation of a partial sheetpile along the lake and placement of dredged sediments after solidification in a cell constructed in the northern basin of Quarry Lake, groundwater collection and treatment and installation of a soil cap would also be included. Physical controls, sediment dredging and groundwater monitoring are common elements. (See Figure 8)

The remedial alternatives for each operable unit are discussed below relative to the evaluation criteria. The evaluation criteria discussed below are self explanatory, with the exception of "Compliance with SCGs." SCGs are the New York State Standards, Criteria and Guidelines that are appropriate for the site. There

are three general categories for SCGs (modeled after the Federal ARARs - Applicable or Relevant and Appropriate Requirements): Chemical specific, location specific and action specific. Chemical specific SCGs would include surface and groundwater standards for the chemicals of concern at the site. Location specific SCGs would deal with any special requirements that may be necessary due to the location of the site (e.g., Federal and State permits for altering wetlands). Action specific SCGs would be any requirements that would have to be met during implementation of the remedy (such as the requirements of the Resources Conservation and Recovery Act).

Alternative 1 - No Action:

Short-Term Impacts and Effectiveness: No construction is required to implement this alternative; therefore, there are no associated increased short term risks to the community, environment or workers.

Long-Term Effectiveness and Permanence: This alternative is neither an effective nor permanent remedy for the risks posed by the contaminants at the site. The identified human health risks would not be addressed. Future use of the land would be severely restricted due to the potential for exposure to the contaminants.

Reduction in Toxicity, Mobility and Volume in Hazardous Waste: This alternative does not reduce the toxicity, mobility nor the volume of hazardous waste at the site.

Implementability: The no action alternative is easily implemented compared to the other alternatives.

Compliance with SCGs: This alternative will not result in compliance with chemical-specific SCGs nor any appropriate agency advisories, guidelines or objectives. It would be in compliance with location-specific SCGs restricting activities in wetlands, but not other location-specific SCGs.

Overall Protection of Human Health and the Environment: This alternative provides no protection for human health or the environment and does not address the risks posed by contaminants at the site. These risks may increase due to deterioration of existing on-site conditions

Cost: There is no cost associated with this alternative. (See Table 6 for costs)

Alternative 2 - Institutional Control:

Short-Term Impacts and Effectiveness: There would be minimal construction required to implement this alternative. Therefore, there would be negligible associated increased short term risks to the community, environment or workers.

Long-Term Effectiveness and Permanence: This alternative is neither an effective nor permanent remedy for the risks posed by the contaminants at the site. The identified human health risks to a user/trespasser would be addressed by continued site restrictions. However, the health risks to residents and environmental effects may worsen due to the deterioration of the existing on-site conditions. Future land use would be permanently restricted over the entire site due to the potential for exposure to the contaminants.

Reduction of Toxicity, Mobility and Volume of Hazardous Waste: This alternative does not reduce the toxicity, mobility or volume of hazardous waste at the site.

Implementability: This alternative is easily implemented since no technical or administrative difficulties are posed by the continuation of the monitoring program.

Compliance with SCGs: Implementation of this alternative will not result in compliance with chemical specific SCGs. It would be in compliance with location-specific SCGs restricting activities in wetlands, but not other location-specific SCGs.

Overall Protection of Human Health and the Environment: This alternative provides insufficient protection for human health or the environment.

Cost: The cost associated with this alternative is $684,000. (See Table 6)

Alternative 3 - Containment:

Short-Term Impacts and Effectiveness: This alternative will produce short-term risks from volatile and fugitive dust emissions during dredging and placement (under Alternative 3a) or treatment of sediments (under Alternative 3b) and grading for the cap. These risks are easily controlled, and control efforts would not impact community lifestyle. Both the remedial action and the efforts to control these risks are expected to extend past two years.

Long-Term Effectiveness and Permanence: This alternative would provide for long term, permanent reduction in the human health and environmental risks posed by the site. Although treatment would be applied to the groundwater only, this activity combined with containment and capping of the process/fill area, groundwater controls and dredging of the lake sediments would provide an effective long term remedy. For Alternative 3b solidification of the lake sediments will further prevent migration of the contaminants by immobilizing them. Solidification of the sediments will also strengthen the subbase for the cap. Future land use under either 3a or 3b would be somewhat restricted in that there could be no subsurface work performed in or near the containment area after remediation is completed.

Reduction of Toxicity, Mobility and Volume of Hazardous Waste: The mobility of the hazardous waste would be significantly reduced by containing the process/fill area reducing groundwater movement. Some reduction in toxicity and volume of the hazardous waste would result from the collection and treatment of groundwater. Under Alternative 3b, the mobility of contaminants in the lake sediments would be further reduced through solidification. In addition, the solidified sediments spread over the site would reduce the amount of infiltration to the site due to their lower hydraulic conductivity.

Implementability: The technologies of this alternative are very effective in meeting the performance goals. However, under Alternative 3a, the physical characteristics of the lake sediments would make direct placement on the site difficult. Technologies, vendors and equipment for treatment and construction activities should be readily available without significant delay. The organic and inorganic compounds in the groundwater can effectively be removed using existing treatment methods. Construction of a groundwater treatment plant is included as part of this alternative.

Compliance with SCGs: This alternative meets most chemical-specific SCGs in the process/fill area. Groundwater within the contained area will continue to contain contaminants above groundwater standards for a number of years. In addition, the groundwater in the clay confining unit and the lower water bearing zone will still contain low levels of contaminants in excess of groundwater standards. There is no current exposure route to these aquifers.

Any future potential exposure would be limited by land use restrictions. This alternative (both 3a and 3b) will meet the action-specific SCGs.

Overall Protection of Human Health and the Environment: Implementation of this alternative would remove the human exposure pathway to the contaminants and will be protective of human health and the environment.

Cost: The cost of implementing Alternative 3a is $11,496,000 ($8,417,000 capital cost; $3,079,000 present worth of Operation and Maintenance(O&M)). The cost of implementing Alternative 3b is $16,189,000 ($13,110,000 capital cost; $3,079,000 present worth of O&M) (See Table 6)

Alternative 4 - Hot Spot Treatment with Ex-Situ Solidification:

Short-Term Impacts and Effectiveness: Ex-situ treatment of contaminated fill/soil at the site will disturb areas of the site containing the highest concentration of contaminants and present the highest short term risks due to emissions of dust and volatiles. Emissions from these activities can be controlled using existing technologies to minimize the impact on the workers and nearby residents. Dredging and treatment of lake sediments and grading for the cap can produce a risk to the community which can be easily controlled with proper management and design. Remediation time is expected to exceed two years.

Long-Term Effectiveness and Permanence: The hot spot contamination areas will be treated (solidified) with this alternative. Solidification of inorganic waste is considered a permanent remedy. Treatability studies have been performed on both the lake sediments and process/fill area soils. Results of these studies indicate that solidification is effective in immobilizing the metal contaminants in these media. Solidification would provide long-term protection to human health and the environment against the risks associated with contact with the metal contaminants in the process/fill area and lake sediments. However, this technology is not accepted by EPA for treatment of the organic contaminants. Future use of the site would be somewhat limited (i.e. there could be no subsurface work performed in or neat the treated fill area after remediation) Fairly extensive long term monitoring will be required to ensure that migration of contaminants does not occur.

Reduction in Toxicity, Mobility and Volume of Hazardous Wastes: This alternative would significantly reduce the mobility of hazardous wastes at the site. This alternative would not reduce the toxicity or volume of wastes because wastes are neither destroyed nor removed.

Implementability: Treatability studies have been performed to determine the type and amount of solidifying agent necessary to immobilize the contaminants and best meet performance goals at the site. The alternative will require intrusive activities within the area of the highest contamination. This work may require additional measures to control dust and volatile emissions which could produce delays. The technologies for this alternative are available for site-specific application.

Compliance with SCGs: This alternative meets must chemical, location and action-specific SCGs within the process/fill area with the exception of treatment for organic contaminants in both soil and groundwater. Groundwater in the clay confining unit and lower water bearing zone will still contain contaminants in excess of groundwater standards. There is no current exposure route for these contaminants. Future exposure would be limited by land use restrictions.

Overall Protection of Human Health and the Environment: This alternative will eliminate all routes of exposure to the contaminants at the site. It is protective of human health and the environment.

Cost: The cost of implementing this alternative is $16,298,000 ($14,820,000 capital cost; $1,478,000 present worth of O&M). (See Table 6)

Alternative 5 - Hot-Spot Treatment with In-Situ Solidification:

Short-Term Impacts and Effectiveness: Intrusive activities will disturb areas of the site containing the highest concentrations of contaminants. Dust emissions and contaminant volatilization may potentially have a negative impact on both the community and the environment. However, readily available methods for controlling both dust and contaminant emissions should provide adequate control. The time required for full implementation of this alternative is longer than two years. It is expected that the risk due to emissions will be lower using in-situ methods of solidification as opposed to

ex-site methods. This is because there would be no excavation of the contaminated material using in-situ methods.

Long-Term Effectiveness and Permanence: The hot spot contamination areas will be treated (solidified) with this alternative. Solidification of inorganic waste is considered a permanent remedy. Treatability studies have been performed on both the lake sediments and process/fill area soils. Results of these studies indicate that solidification is effective in immobilizing the contaminants in these media. Solidification would provide long term protection to human health and the environment against risks associated with contact with the contaminated soil/fill. Combined with lake sediment solidification, containment and capping of the process/fill area, this alternative would provide an effective long term remedy. This alternative will require future site restrictions in that no subsurface work could be performed in or near the treated fill area. Fairly extensive long term monitoring of the groundwater will be necessary to ensure that migration of contaminants does not occur.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: This alternative will significantly reduce the mobility of hazardous waste at the site. The alternative will not reduce the toxicity or volume because the wastes are neither destroyed nor removed, but rather immobilized.

Implementability: The technologies for this alternative are well established and commercially available. This method will use methods which would result in lower dust and volatile emissions. Unknown subsurface conditions (i.e. the presence of boulders or debris) could cause delays due to interference with the injection or mixing of the immobilizing agents.

Compliance with SCGs: This alternative will meet most chemical, location and action-specific SCGs within the process/fill area with the exception of treatment for organic contaminants in both soil and groundwater. Groundwater in the clay confining unit and the lower water bearing zone will still contain contaminants in excess of groundwater quality standards. There is no current exposure route to these contaminants. Any future exposure would be limited by land use restrictions.

Overall Protection of Human Health and the Environment: The combination of media-specific remedial technologies should stop almost all contaminant

migration from the site. Further, the alternative will remove the exposure pathways of the contaminants to the nearby community and the environment. Therefore, this alternative is protective of human health and the environment.

Cost: The cost of implementing this alternative is $22,659,000 ($21,611,000 capital cost; $1,048,000 present worth of O&M). (See Table 6)

Alternative 6 - Full Treatment with Solidification and Hot-Spot Thermal Desorption:

Short-Term Impacts and Effectiveness: Several of the components of this alternative (hot-spot excavation, thermal desorption, in-situ solidification) are intrusive activities that will disturb areas of the site with high concentrations of contaminants. These activities may potentially affect both the community and the environment due to dust emissions or volatilization of contaminants during excavation and soil mixing. Mitigative measures are available for controlling both dust and contaminants. Implementation of this alternative and the mitigative efforts required to control short-term risks are expected to take more than two years.

Long-Term Effectiveness and Permanence: Excavation of hot-spot areas and thermal desorption of organic contaminants would result in a permanent remediation of the highly contaminated material. Solidification of wastes in the non-hot-spot areas would significantly reduce the mobility of the contaminants. Future land use would be somewhat limited (i.e. there could be no subsurface work performed in or near the fill area after remediation) Periodic monitoring will be required to ensure the integrity of the solidified waste, the soil cap and the containment of contaminated groundwater.

Reduction in Toxicity, Mobility and Volume of the Hazardous Waste: This alternative reduces both the toxicity and volume of organic contaminants in the most contaminated areas on-site by excavating and treating them. Mobility of metal contaminants in the remaining areas is reduced by treatment with in-situ solidification.

Implementability: Implementation of this alternative could be affected by several factors. Problems may be created by the waste buried at the site,

which includes drums, scraps, debris, and highly contaminated areas. Monitoring will be required to assess the effectiveness of the alternative.

Compliance with SCGs: This alternative was designed to meet or exceed all SCGs associated with the process/fill area. Groundwater in the clay confining unit and the lower water bearing zone will still contain contaminants in excess of groundwater quality standards. There are no current exposure route to these contaminants. Any future exposure would be limited by land use restrictions.

Overall Protection of Human Health and the Environment: This alternative meets all specific remedial action requirements that were designed to reduce potential health risks associated with migration of contaminants from the site. This alternative addresses all contaminated media at the site including the soil/fill, groundwater, surface water and sediments. The alternative would be protective of human health and the environment.

Cost: The cost of implementing this alternative is $38,913,000 ($37,435,000 capital cost; $1,478,000 present worth of O&M). (See Table 6)

Section 7 - Summary of the Government's Decision

Upon review of the site data and evaluation of the available alternatives, the State has identified a proposed remedial action for this site. The proposed remedial alternative is Alternative 3b: Containment, with solidification of the lake sediments. The alternative will include the following:

- a grouted sheetpile, or technical equivalent, will be installed around the site to provide a containment boundary for contaminated soils and to assist the collection system in maintaining an inward groundwater gradient;

- a groundwater collection system will be installed within the contained area to collect contaminated groundwater and create an inward groundwater gradient. The collected groundwater will either be treated on-site or at a licensed off-site location, whichever is more cost effective;

- contaminated sediments within Quarry Lake will be dredged. These sediments will be solidified and placed over the site within the containment area. Previously dredged sediments will be similarly placed;

- a multi-layered synthetic geomembrane (MSG) cap, or technical equivalent, will be installed over the containment area;

- physical controls will be installed to control both surface drainage and overflow from the lake. The ditch on Townline Road will be improved to handle this drainage;

- monitoring wells will be installed to monitor the effectiveness of the remedy.

The total cost of this remedy is $16,189,000. (Note: This cost includes construction of a groundwater treatment plant. If off-site treatment of collected groundwater is more cost effective, the total remedy cost will decrease).

During design of the remedy, an evaluation will be made to assess the feasibility of consolidating the 7.4 acre process/fill area into a smaller one. Consideration will be given to reducing both remedial costs and overall size of areas requiring future use restrictions. Furthermore, to the extent practicable, consideration will be given to restoring some of the consolidated areas back to wetland conditions that existed prior to site development. Such action may serve to extend the size and value of designated wetland TE-6 that exists adjacent to and northeast of the process/fill area.

APPENDIX 1

Administrative Record

1. Hydrogeologic Investigation, Pendleton Quarry Lake, prepared for Frontier Chemical Waste Process Inc. by Golder Associates, Ltd., October, 1989

2. Citizen Participation Plan for the Frontier Chemical-Pendleton site, prepared by NYS Department of Environmental Conservation, March, 1990.

3. Work Plan for the Remedial Investigation/Feasibility Study (RI/FS) at the Frontier Chemical-Pendleton site, prepared by URS Consultants, May, 1990.

4. Health and Safety Plan for the RI/FS at the Frontier Chemical-Pendleton site, prepared by URS Consultants, May, 1990.

5. Quality Assurance Project Plan and Field Sampling Plan for the Frontier Chemical-Pendleton site, prepared by URS Consultants, May, 1990.

6. Work Plan for the Second Phase RI, at the Frontier Chemical-Pendleton site, prepared by NYS Department of Environmental Conservation, December, 1990.

7. Remedial Investigation Report for the Frontier Chemical-Pendleton site, prepared by URS Consultants, June, 1991.

8. Draft Final Feasibility Study for the Frontier Chemical-Pendleton site, prepared by URS Consultants, January, 1992.

9. Proposed Remedial Action Plan for the Frontier Chemical-Pendleton site, prepared by NYS Department of Environmental Conservation, January, 1992.

10. Transcript of the public meeting regarding the PRAP for the Frontier Chemical-Pendleton site, prepared by DePaulo-Crosby, Freelance Reporters, February, 1992.

APPENDIX 2

Responsiveness Summary for Comments Received During Public Comment Period for the Frontier Chemical-Pendleton Proposed Remedial Action Plan

A public meeting was held on January 22, 1992 to present the Frontier Chemical-Pendleton Proposed Remedial Action Plan (PRAP). The public comment period on the PRAP ran from January 17, 1992 to February 17, 1992. During this time period, three letters regarding the PRAP were received. This responsiveness summary addresses the concerns and questions raised at both the public meeting and the letters regarding the PRAP. A transcript of the public meeting is part of the Administrative Record for this Record of Decision.

1. A number of questions were raised at the public meeting regarding the start of remedial design and construction for the remedy at this site. This question was also raised in letters from Town Supervisor Shirley Conner, Assemblyman Murphy and Senator Daly. The State is required, under Title 13 of the Environmental Conservation Law to give the Responsible Party(s) for the site an opportunity to implement the remedy specified in this ROD. The Responsible Party(s) must perform this work under a Consent Order with the Department. It is the Department's policy to have the remedy implemented by the Responsible Party(s). If the Responsible Party(s) is(are) unwilling or unable to implement this remedy, the State will pursue its options to assure site cleanup, including the option to implement remediation using funds from the State Superfund.

   Design of the remedy will take approximately one year to complete. Implementation of the remedy will last at least two years. The start date of these tasks cannot be determined at this time, because it depends on the willingness of the Responsible Party to perform the work.

2. Q: What is the expected lifetime of the sheet piling to be installed around the site?

A: The sheet pile is expected to have a useful life in excess of thirty five years. If, during Remedial Design (RD), it is determined that a slurry wall would be cheaper to install than sheet pile, then a slurry wall will be installed. The Record of Decision has been revised to provide for this evaluation. The effectiveness of the containment system (either sheetpile or slurry wall) will be re-evaluated every five years.

3. Q: Were disposal trenches, buried barrels, construction/demolition debris outside the contained area found at the site?

A: None of this material was found at the site.

4. Q: How long will Frontier be given to respond to the State regarding performance of the Remedial Design/Remedial Action (RD/RA)?

A: There are no specific time frames in the State regulations for a responsible party to respond. The responsible party will be given a reasonable amount of time to indicate their willingness to perform the RD/RA.

5. Q: Could Frontier Chemical be sold as a means of avoiding responsibility for this site?

A: No. Past, current and future owners of Frontier Chemical and this site can be held liable for this site.

6. Q: How could the site be used after remediation?

A: The following site restrictions would be placed on the site after remediation: there would be a prohibition of construction on the

contained process/fill area with emphasis placed on any activity that could affect the integrity of containment. After the remedy is implemented the subsurface could not be punctured in any way, so as to avoid seepage of water into the site. Also, the ground surface would not likely have the structural integrity to support any type of building. In addition, installation of groundwater wells in the immediate area would have to be prevented, due to the low levels of contaminants in the lower aquifer. The site could be used as a recreational facility.

7. Q: Would Quarry Lake be pumped out in order to dredge the bottom?

A: Possibly, if mechanical dredging is cheaper and easier to implement than hydraulic dredging. This will be determined during Remedial Design.

8. Q: Will the residents living near the site be affected by the remediation?

A: All potential adverse effected of the remediation to the residents near the site will be kept to a minimum. Measures will be implemented to restrict the migration of contaminants from the site during remediation. The primary means of migration is from dust. It is relatively easy to control dust migration during remediation. These control measures include wetting the area under construction and the use of chemical dust suppressants, such as calcium chloride. Both will prevent the generation of dust. Air monitoring for particulates and volatiles will be routinely performed to ensure the health and safety of both the residents near the site and the workers performing the remediation.

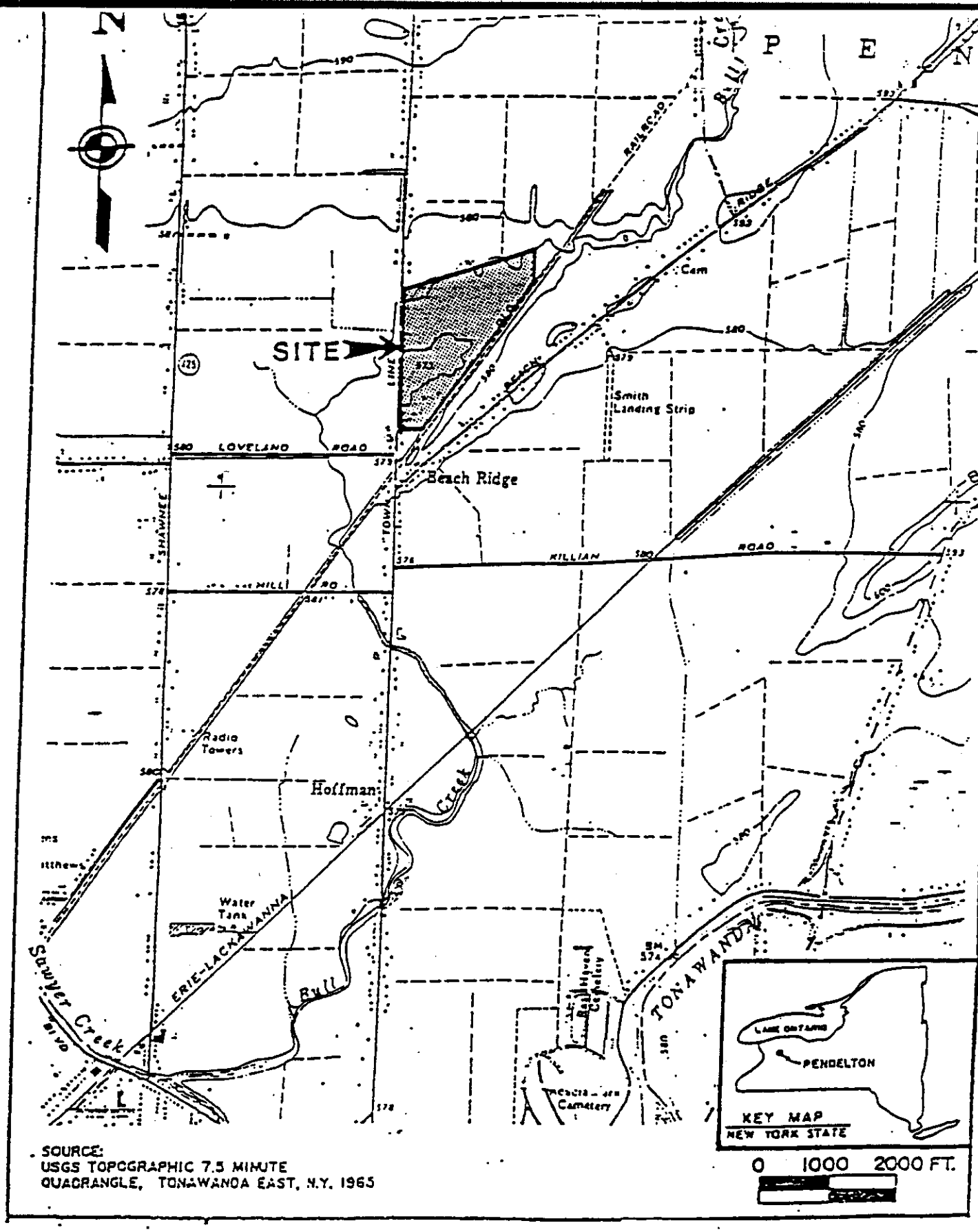
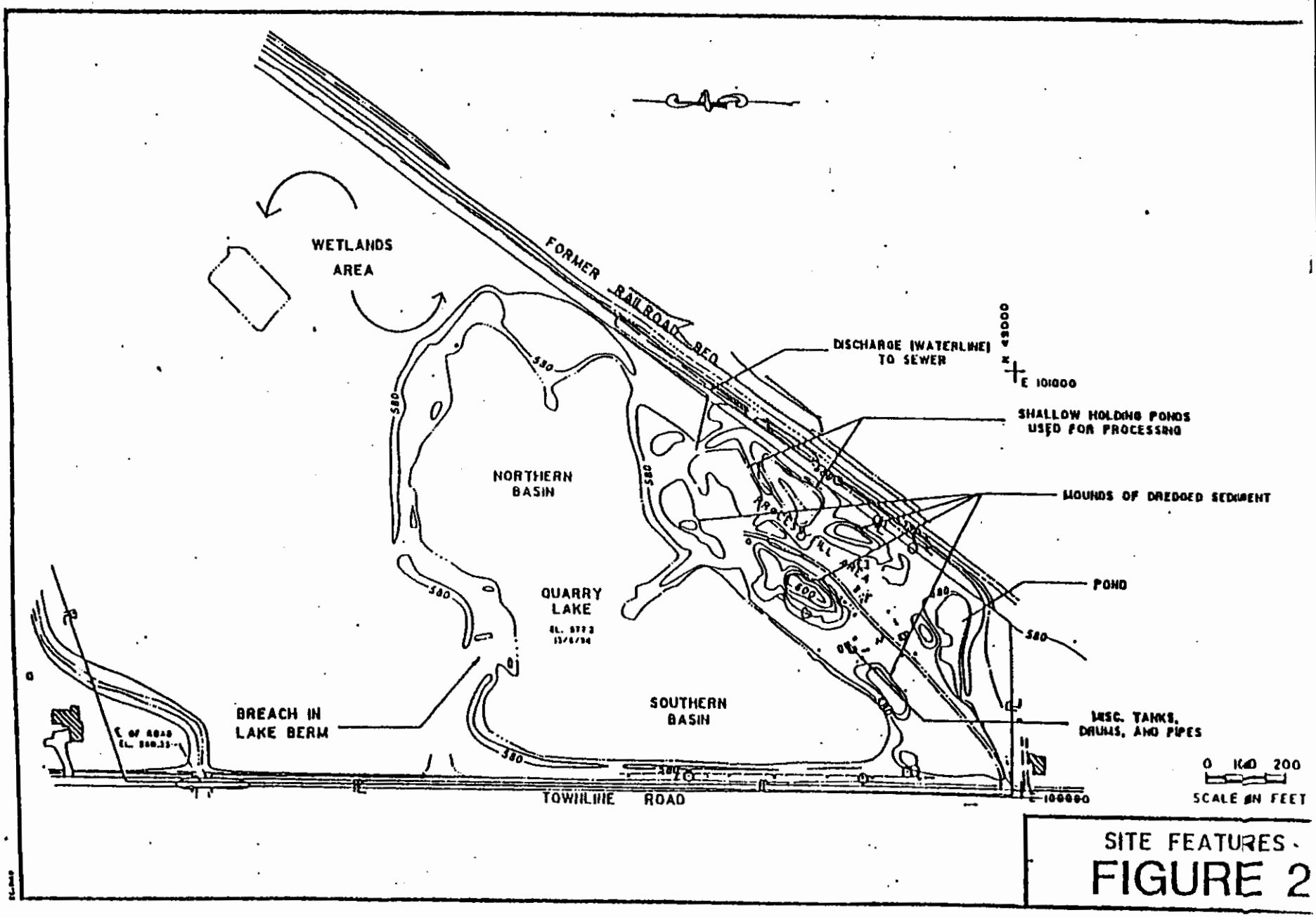

N
SITE
LOVELAND ROAD
Beach Ridge
KILLIAN ROAD
Smith Landing Strip
Radio Towers
Hoffman Creek
Water Tank
ERIE-LACKAWANNA
Sawyer Creek Blvd
TONAWANDA
Cem
SHAWNEE
TOWN LINE
RIDGE
BEACH
HILL RD
PENDELTON
LAKE ONTARIO
KEY MAP
NEW YORK STATE
0 1000 2000 FT.
SOURCE:
USGS TOPOGRAPHIC 7.5 MINUTE
QUADRANGLE, TONAWANDA EAST, N.Y. 1965

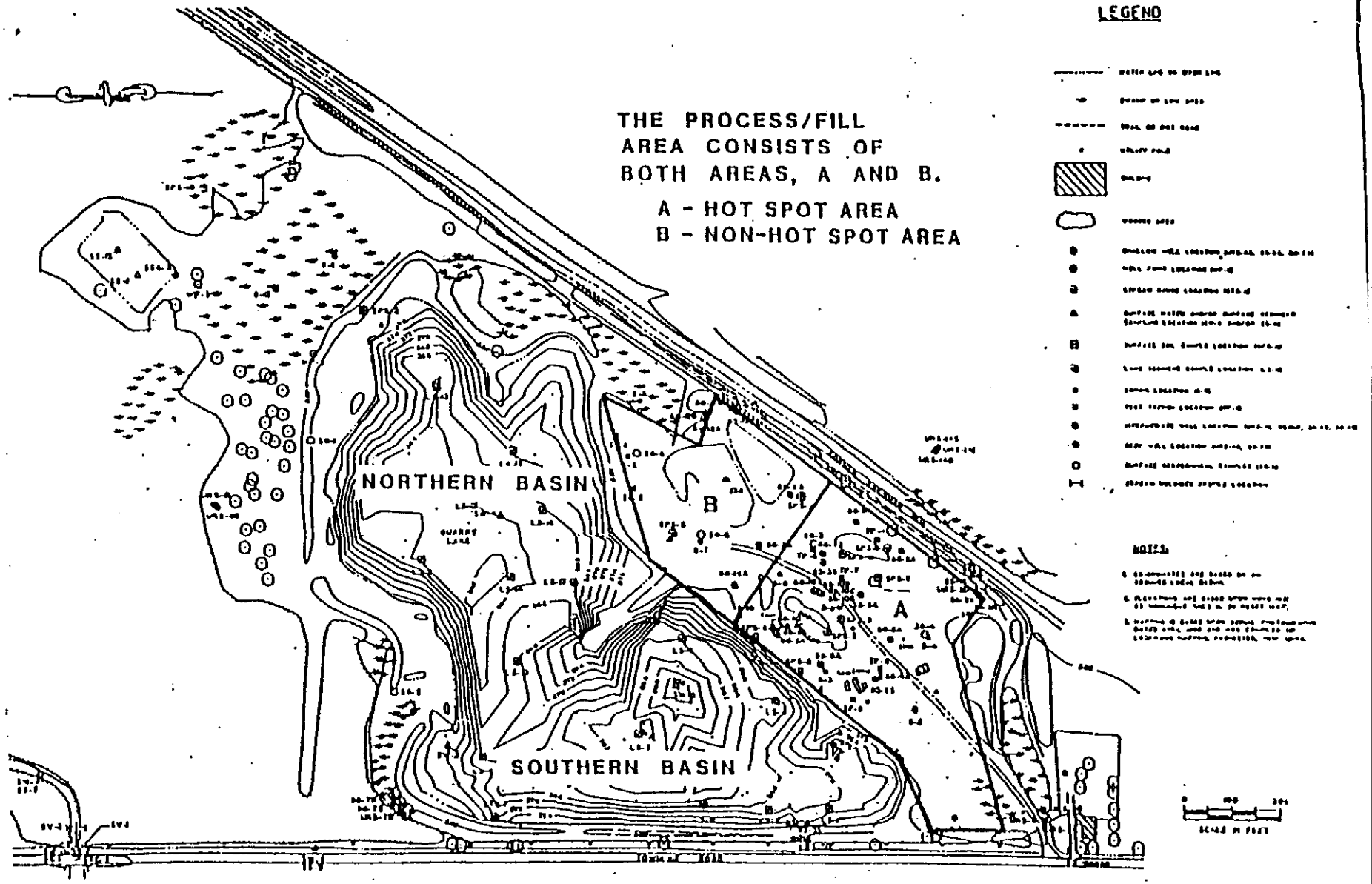
FIGURE 1



SITE FEATURES -

FIGURE 2

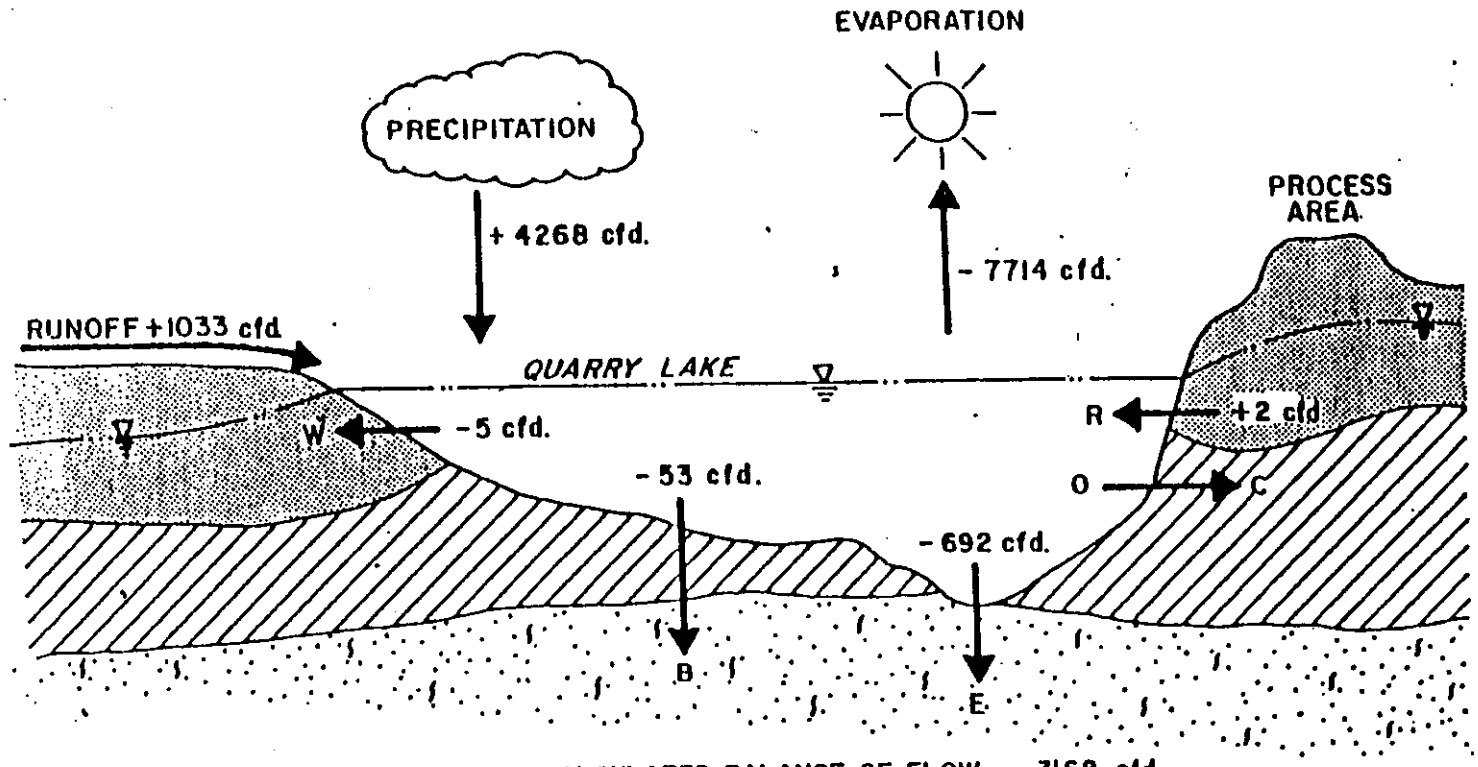
A-3776A



URS

REGIONS OF CONTAMINATION

FIGURE 3



CALCULATED BALANCE OF FLOW = -3168 cfd.
OBSERVED LAKE BALANCE (7/11/90 - 8/9/90) = -2890 cfd.
ALL VALUES GIVEN IN ft^3/DAY (cfd.)

HYDROGEOLOGIC UNITS

- UPPER WATER BEARING ZONE
- CLAY CONFINING UNIT
- LOWER AQUIFER
- WATER TABLE SURFACE

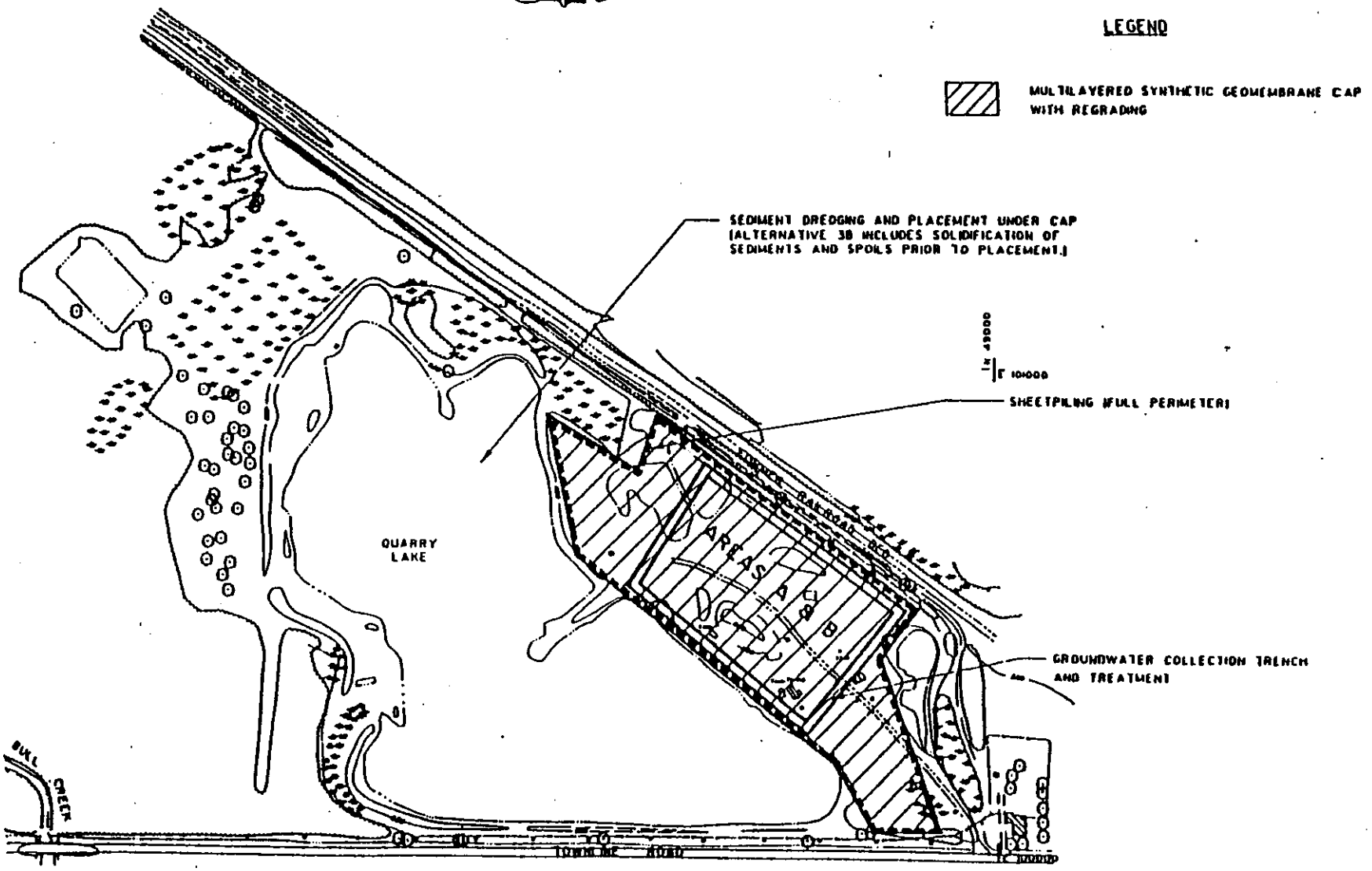
KEY

- R - RECHARGE FROM PROCESS AREA MOUND
- W - FLOW THROUGH WEATHERED CLAY
- C - FLOW THROUGH CLAY LAYER
- B - FLOW THROUGH CLAY LINED BOTTOM
- E - FLOW THROUGH EXCAVATED AREA OF LAKE BOTTOM

NOT TO SCALE

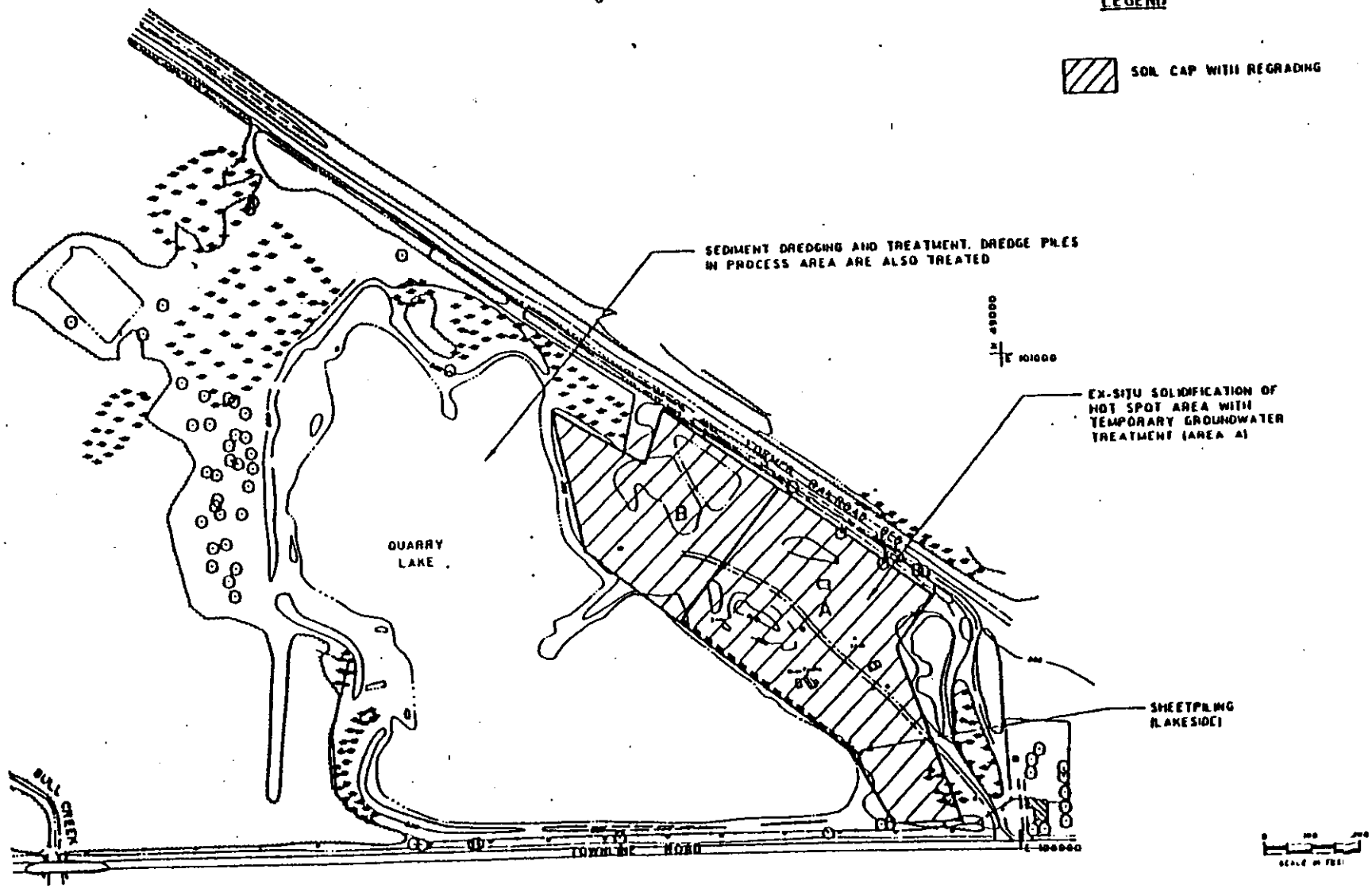
QUARRY LAKE WATER BALANCE 7/11/90 - 8/9/90

FIGURE 4



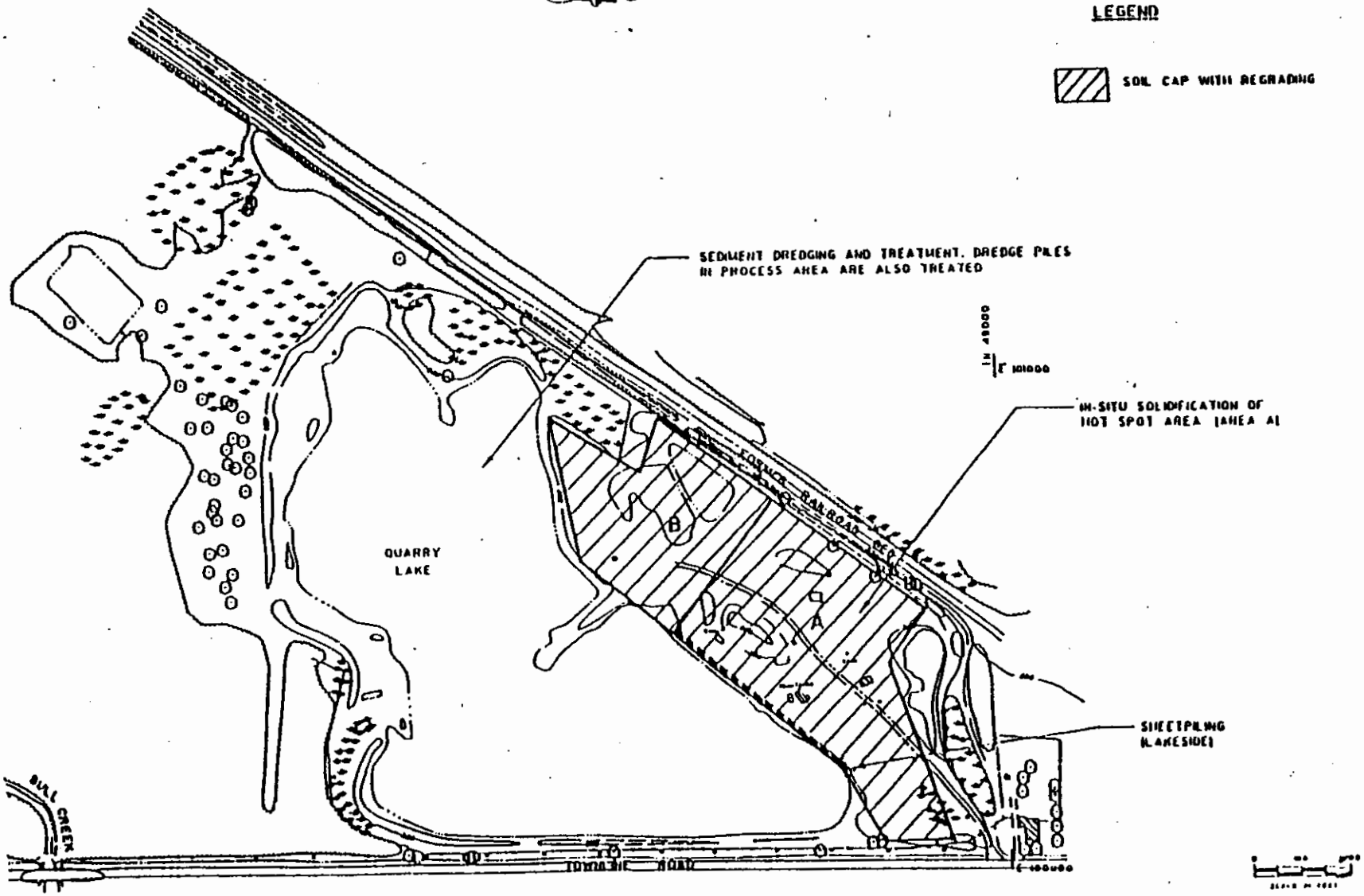
FRONTIER CHEMICAL
ALTERNATIVES 3A & 3B

FIGURE 5



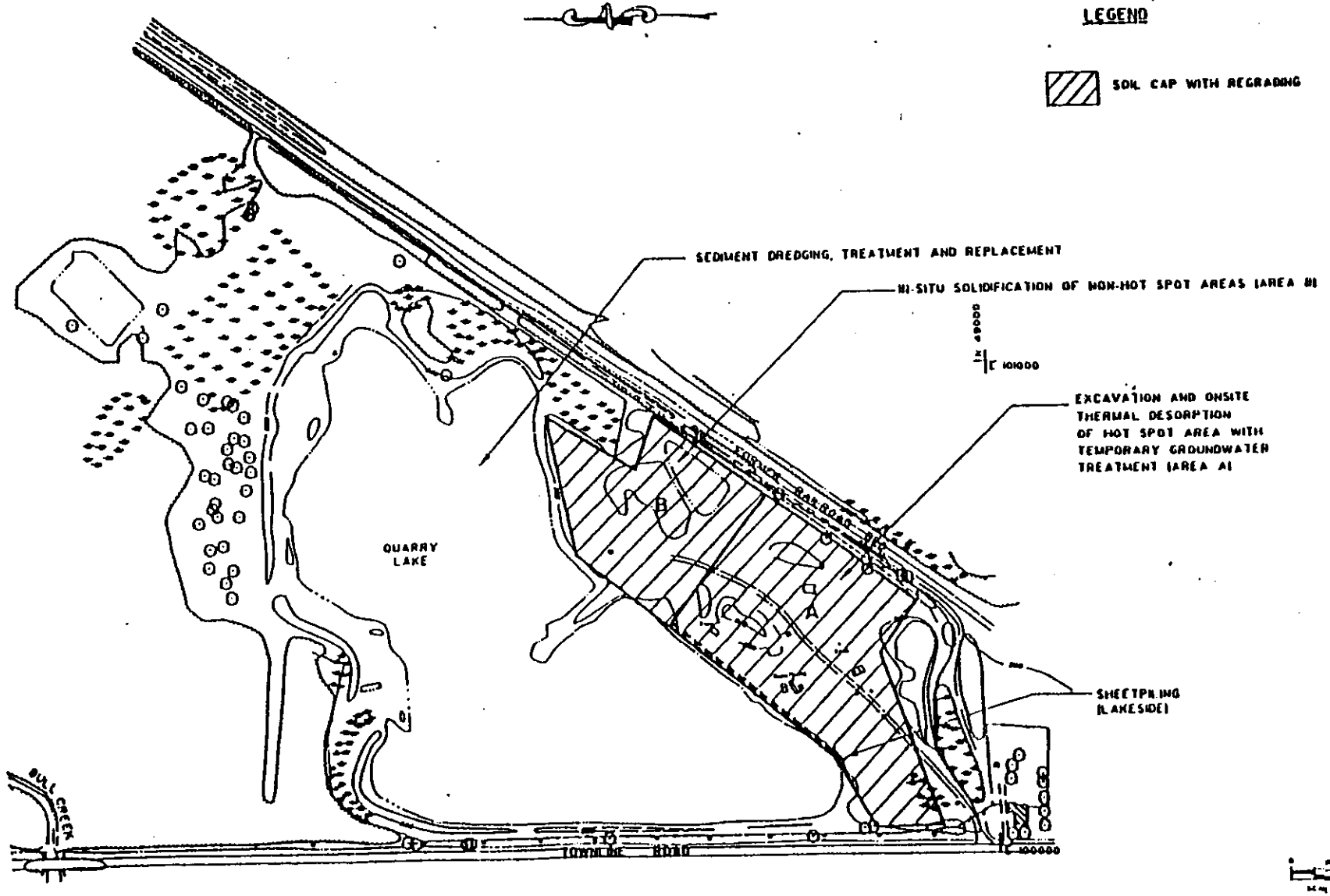
FRONTIER CHEMICAL
ALTERNATIVE 4

FIGURE 6



FRONTIER CHEMICAL
ALTERNATIVE 5

FIGURE 7



FRONTIER CHEMICAL
ALTERNATIVE 6

FIGURE 8

ORGANIC COMPOUNDS DETECTED IN SUBSURFACE FILL MATERIALS
(15 Samples Within Known Area of Fill)

Compound	Maximum Concentration (ppb)	Location of Maximum Detection	Total No. of Detections
Vinyl Chloride	130	B-9	2
Methylene Chloride	810	T-7	1
Carbon Disulfide	6	B-4	3
1,1 Dichloroethene	10	B-4	1
1,1 Dichloroethane	5,700	T-7	8
1,2 Dichloroethene (total)	8,900	B-3	11
1,2 Dichloroethane	68	B-4	2
2-Butanone	5	T-3	1
1,1,1-Trichloroethane	51,000	T-5	10
Trichloroethene	33,000	T-7	12
Benzene	15,000	B-3	11
4-Methyl-2-Pentanone	99,000	B-3	5
Tetrachloroethene	160,000	T-5	12
Toluene	1,600,000	T-5	10
Chlorobenzene	7,100	B-2	2
Ethylbenzene	42,000	B-3	10
Total Xylenes	120,000	B-3	11
Phenol	13,000	B-3	4
1,4-Dichlorobenzene	18,000	T-7	3
1,2-Dichlorobenzene	120,000	T-5	7
4-Methylphenol	13,000	B-3	4
Nitrobenzene	120,000	T-5	1
Isophorone	1,900	T-4	3
2-4-Dimethylphenol	2,100	B-3	1
Benzoic Acid	320	B-10	1
1,2,4-Trichlorobenzene	89,000	B-8	8

Table 1 (continued)

Compound	Maximum Concentration (ppb)	Location of Maximum Detection	Total No. of Detections
Naphthalene	7,700	B-8	9
2-Methylnaphthalene	6,100	B-8	7
Acenapthylene	480	B-1	2
Acenapthene	190	B-1	1
Dibenzofuran	330	B-1	3
Diethylphthalate	490	T-8	5
Fluorene	500	B-1	3
n-Nitrosodiphenylamine	3,700	T-4	2
Phenanthrene	4,600	B-1	11
Anthracene	780	B-1	4
Di-n-butylphthalate	920	B-8	10
Fluoranthene	5,500	B-1	7
Pyrene	4,500	B-1	14
Butylbenzylphthalate	2,300	B-8	2
Benzo(a)anthracene	1,600	B-2	3
Chrysene	2,400	B-1	7
bis(2-Ethylhexyl)phthalate	95,000	B-8	7
di-n-octylphthalate	450	T-4	2
Benzo(b)fluoranthene	2,200	B-1	8
Benzo(k)fluoranthene	460	B-1	4
Benzo(a)pyrene	1,300	B-2	5
Ideno(1,2,3-cd)pyrene	2,000	B-1	4
Dibenz(a,h)anthracene	800	B-1	3
Benzo(g,h,i)perylene	1,900	B-1	4
Heptachlor	1.6	B-4	1
Aldrin	11	URS-2D	2
gamma-Chlordane	25	B-1	1
Aroclor-1242	3,300	B-2	1

Table 1 (continued)

Compound	Maximum Concentration (ppb)	Location of Maximum Detection	Total No. of Detections
Aroclor-1254	9,200	B-3	3
Aroclor-1260	6,200	T-8	9
Total Phenols	94,200	B-3	15

COMPARISON OF METALS CONCENTRATIONS BETWEEN SUBSURFACE SOIL AND FILL MATERIALS

	Conc. in Fill (15)++			Conc. in Soil (5)++		
Analyte	Min	Max	Mean+	Min	Max	Mean+
Aluminum	11,200	24,000	18,840	21,000	28,500	26,620
Antimony	ND	7.8	6.1	ND	5.1	5.2
Arsenic*	2.5	36.0	8.3	ND	4.0	2.4
Barium	88.9	218	149	126	276	190
Beryllium	0.79	2.6	1.11	0.86	1.5	1.14
Cadmium *	0.69	93.3	22.9	ND	0.49	0.41
Calcium	16,400	182,000	63,767	52,400	99,400	72,320
Chromium *	28.8	941	335	28.7	34.4	30.6
Cobalt	3.6	21.7	13.4	11.4	15.4	13.9
Copper *	29.0	372	110	20.2	28.2	24.7
Iron	11,500	42,500	27,613	25,400	38,200	29,920
Lead *	29.6	120	67.5	8	16	10.7
Magnesium	4,690	32,500	13,063	13,400	14,600	13,980
Manganese	217	1,150	602	453	674	521
Mercury *	ND	1.1	0.78	ND	ND	0.1
Nickel	13.6	119	48.2	27.1	34.3	30.2
Potassium	1520	4840	3163	3,930	6,290	4,600
Selenium	ND	1.2	0.56	ND	ND	0.5
Silver	ND	ND	1	ND	ND	1
Sodium	329	1,390	725	511	567	541
Thallium	ND	0.64	0.55	ND	0.27	0.85
Vanadium	15	75	39.6	35.5	52	40.7
Zinc	80.2	282	157.5	57.9	73.1	66.6
Cyanide	ND	17.8	4.9	ND	ND	2

++ All values given in ppm (mg/kg)

Lead * Indicate maximum concentration found in fill is at least one order of magnitude greater than the mean concentration of soil samples.

+ One-half the contract required detection limit was used for calculation of the arithmetic mean for non detected analytes

ORGANIC COMPOUNDS DETECTED IN LAKE SEDIMENT
(17 TOTAL SAMPLES)

Compound	Maximum Concentration (ppb)	Location of Maximum Concentration	Total No. of Detections*		
			East Basin	West Basin	Total
Carbon Disulfide	2	LS-14/LS-17	3	0	3
1,1-Dichloroethane	2	LS-5	1	1	2
1,2-Dichloroethene (Total)	36	LS-14	3	5	8
2-Butanone	8	LS-16	2	0	2
Trichloroethene	20	LS-5	0	4	4
Benzene	1	LS-5	0	1	1
4-Methyl-2-Pentanone	0.8	LS-4	0	1	1
2-Hexanone	1	LS-4	0	1	1
Tetrachloroethene	4	LS-7	0	3	3
Total Xylenes	2	LS-5	0	1	1
1,2-Dichlorobenzene	50	LS-5	0	2	2
Benzoic Acid	50	LS-6	0	2	2
1,2,4-Trichlorobenzene	100	LS-6	0	2	2
2-Methylnaphthalene	11	LS-6	0	2	2
Acenaphthene	9	LS-2	0	1	1
Dibenzofuran	5	LS-2	0	1	1
Flourene	11	LS-2	0	1	1
Phenanthrene	86	LS-2	0	2	2
Anthracene	20	LS-2	0	1	1
Di-n-butylphthalate	87	LS-17	5	1	6
Fluoranthene	120	LS-2	2	4	6
Pyrene	97	LS-2	1	5	6
Butylbenzylphthalate	17	LS-5	0	6	6
Di-n-octylphthalate	57	LS-12	1	5	6
Benzo(b)fluoranthene	110	LS-14	1	3	4
Benzo(k)fluoranthene	49	LS-2	0	2	2
Benzo(a)pyrene	30	LS-6	0	2	2
Ideno(1,2,3-cd)pyrene	18	LS-6	0	1	1
Aroclor-1254	300	LS-5	0	2	2
Total Phenols	1.06	LS-6	3	7	10

LAKE SEDIMENTS AND BACKGROUND SURFACE AND SUBSURFACE SOILS

Analyte	Conc. in Lake Seds (17)[A]			Mean Conc. Subsurface Soil+	Mean Conc. in Backgrnd. Surface Soils+
	Min.	Max.	Mean+		
Aluminum	16,400	31,300	23,424	26,620	30,333
Antimony	ND	ND	6	5.2	6
Arsenic	2	5.5	3.6	2.4	3.0
Barium	96.5	206	149	190	151
Beryllium	ND	1.4	0.99	1.14	1.2
Cadmium*	ND	86.9	19.9	0.41	1.8
Calcium	24,900	61,300	43,365	72,320	3,610
Chromium*	27.4	1,100	230	30.6	44.6
Cobalt	9.9	24.1	16.6	13.9	13.8
Copper	19.9	253	82.0	24.7	38.4
Iron	22,000	53,500	34,171	29,920	34,100
Lead	ND	40.4	16.7	10.7	20.3
Magnesium	7,480	17,200	13,931	13,980	7,867
Manganese	391	746	567	521	281
Mercury	ND	ND	0.1	0.1	0.11
Nickel	24.9	93.2	50.0	30.2	40.2
Potassium	2,630	6,280	4,869	4,600	3,777
Selenium	ND	ND	0.5	0.5	0.53
Silver	ND	ND	1	1	1
Sodium	360	705	482	541	328
Thallium	ND	0.31	0.48	0.85	1
Vanadium	31	76.7	48.7	40.7	45.1
Zinc	51.9	194	104	66.6	140
Cyanide*	ND	22.9	3.6	2	1.58

[A] All values given in ppm (mg/kg)

Cadmium* Indicates maximum concentration found in lake sediments is at least one order of magnitude greater than either the mean concentration in surface or subsurface soil

+ One-half the contract required detection limit was used for calculation of the arithmetic mean for samples with non-detected analytes

Summary of Groundwater Treatment Design Data

Parameter	Type	Units	Design Concentration (Influent)
Vinyl Chloride	VOC	µg/L	800
Methylene Chloride	VOC	µg/L	5,600
Acetone	VOC	µg/L	20,400
1,1-Dichloroethane	VOC	µg/L	400
1,2-Dichloroethene (Total)	VOC	µg/L	21,000
Chloroform	VOC	µg/L	800
1,2-Dichloroethane	VOC	µg/L	88,700
2-Butanone	VOC	µg/L	70
1,1,1-Trichloroethane	VOC	µg/L	1,900
Trichloroethene	VOC	µg/L	13,500
Benzene	VOC	µg/L	3,300
4-Methyl-2-Pentanone	VOC	µg/L	3,100
Tetrachloroethene	VOC	µg/L	3
Toluene	VOC	µg/L	92,800
Chlorobenzene	VOC	µg/L	60
Ethylbenzene	VOC	µg/L	150
Total Xylenes	VOC	µg/L	1,200
Phenol	SEMI	µg/L	6,700
bis(2-Chloroethyl)ether	SEMI	µg/L	60
1,4-Dichlorobenzene	SEMI	µg/L	5
Benzyl Alcohol	SEMI	µg/L	90
1,2-Dichlorobenzene	SEMI	µg/L	5
2-Methylphenol	SEMI	µg/L	500
4-Methylphenol	SEMI	µg/L	1,700
Nitrobenzene	SEMI	µg/L	200
Isophorone	SEMI	µg/L	30
2,4-Dimethylphenol	SEMI	µg/L	40
Benzoic Acid	SEMI	µg/L	500
Bis(2-chloroethoxy)methane	SEMI	µg/L	70
1,2,4-Trichlorobenzene	SEMI	µg/L	5
Naphthalene	SEMI	µg/L	80
4-Chloroaniline	SEMI	µg/L	8
2-Methylnaphthalene	SEMI	µg/L	6
Phenanthrene	SEMI	µg/L	5
Di-n-butylphthalate	SEMI	µg/L	5
Fluoranthene	SEMI	µg/L	5
Pyrene	SEMI	µg/L	5
Butylbenzylphthalate	SEMI	µg/L	5
bis(2-Ethylhexyl)phthalate	SEMI	µg/L	40
Total Volatiles	*VOC*	*µg/L*	*253,733*
Total Semivolatiles	*SEMI*	*µg/L*	*10,064*
Total Organics		*µg/L*	*263,847*

DSGNLIMT.WK1 14-May-91

Summary of Groundwater Treatment Design Data

Parameter	Type	Units	Design Concentration (Influent)
Aluminum	MCP	µg/L	4,000
Antimony	MCP	µg/L	40
Arsenic	MCP	µg/L	30
Barium	MCP	µg/L	200
Cadmium	MCP	µg/L	10
Calcium	MCP	µg/L	430,000
Chromium	MCP	µg/L	77,900
Cobalt	MCP	µg/L	30
Copper	MCP	µg/L	80
Iron	MCP	µg/L	12,500
Lead	MCP	µg/L	10
Magnesium	MCP	µg/L	947,000
Manganese	MCP	µg/L	1,000
Nickel	MCP	µg/L	200
Potassium	MCP	µg/L	63,200
Selenium	MCP	µg/L	3
Sodium	MCP	µg/L	1,450,000
Vanadium	MCP	µg/L	200
Zinc	MCP	µg/L	80
Cyanide	MCP	µg/L	1,000
Phenols	MCP	mg/L	30
Bicarbonate	MISC	mg/L	500
BOD	MISC	mg/L	900
COD	MISC	mg/L	1,200
Chloride	MISC	mg/L	900
Hardness	MISC	mg/L	5,400
Ammonia, as N	MISC	mg/L	20
Total Kjeldahl Nitrogen, as N	MISC	mg/L	40
Alkalinity	MISC	mg/L	500
Acidity	MISC	mg/L	400
Nitrate-Nitrogen	MISC	mg/L	1
Oil and Grease	MISC	mg/L	20
TOC	MISC	mg/L	900
TSS	MISC	mg/L	2,000
TDS	MISC	mg/L	8,000
Sulfate	MISC	mg/L	4,300
pH Units	MISC	mg/L	7

TABLE 4

Summary of Risks

Pathway	Number	Carcinogenic Risk	Chronic Risk
Trespasser Ingestion of Surface Soil	1	3.67E-06	7.06E-02
Trespasser Dermal Contact with Surface Soil	2	6.66E-06	1.28E-01
Trespr. Dermal Contact with Shallow Groundwater	3	5.01E-05	1.20E-01
Trespasser Inhalation of Vapors	4	2.05E-09	5.84E-07
Resident Inhalation of Vapors	5	3.20E-09	9.13E-07
Trespasser Inhalation of Fugitive Dust	6	2.55E-08	1.45E-01
Resident Inhalation of Fugitive Dust	7	2.12E-06	1.26E+01
User Ingestion of Surface Soil	8	7.36E-06	1.42E-01
User Dermal Contact with Surface Soil	9	3.67E-05	7.06E-01
User Dermal Contact with Shallow Groundwater	10	9.73E-05	2.50E-01
User Inhalation of Vapors	11	7.98E-09	2.27E-06
User Inhalation of Fugitive Dust	12	1.02E-07	6.03E-01
User Ingestion of Lake Water while Swimming	13	0.00E+00	1.60E-06
User Dermal Contact with Lake Water (Swimming)	14	0.00E+00	2.26E-04

Scenario	Pathways	Sum Carc. Risk	Sum Chronic Risk
Trespasser - NO ACTION	1-4, 6	6.05E-05	4.64E-01
Resident - NO ACTION	5, 7	2.12E-06	1.26E+01
User - FUTURE USE	8-14	1.41E-04	1.70E+00
Resident/Trespasser - NO ACTION	1-7	6.26E-05	1.31E+01
Resident/User - FUTURE USE	5,7-14	1.44E-04	1.43E+01

TABLE 5

TECHNOLOGY SCREENING SUMMARY

ENVIRONMENTAL MEDIA	REMEDIAL ACTION OBJECTIVES	GENERAL RESPONSE ACTION	REMEDIAL TECHNOLOGIES	PROCESS OPTIONS
SOIL, WASTE, AND FILL	NO ACTION	NO ACTION	NO ACTION	NO ACTION
	PREVENT HUMAN CONTACT	INSTITUTIONAL ACTION	INSTITUTIONAL ACTION	DEED RESTRICTIONS
				LONG TERM MONITORING
		CONTAINMENT	CAPPING	RCRA CAP
				6 NYCRR PART 360 CAP
				MSW CAP
				SOIL CAP
	PREVENT EROSION OF ON-SITE SURFICIAL SOILS INTO LAKE AND BULL CREEK	PHYSICAL CONTROLS	EROSION CONTROLS	VEGETATION
				BERMS AND DITCHES
		CONTAINMENT	CAPPING	(see above)
	PREVENT MIGRATION OF CONTAMINANTS INTO GROUNDWATER	EXCAVATION AND TREATMENT	BIOLOGICAL TREATMENT	BIOLOGICAL TREATMENT
			PHYSICAL/CHEMICAL TREATMENT	SOLIDIFICATION/STABILIZATION
				SOIL WASHING
			THERMAL TREATMENT	INCINERATION
				LOW TEMPERATURE THERMAL DESORPTION
		IN-SITU TREATMENT	BIOLOGICAL TREATMENT	BIOLOGICAL INJECTION
			PHYSICAL/CHEMICAL TREATMENT	CHEMICAL TREATMENT
				IN-SITU SOLIDIFICATION
				IN-SITU VITRIFICATION
		CONTAINMENT	SECURE CELL LANDFILL	ON-SITE RCRA CELL

Table 5 (continued)

TECHNOLOGY SCREENING SUMMARY

ENVIRONMENTAL MEDIA	REMEDIAL ACTION OBJECTIVES	GENERAL RESPONSE ACTION	REMEDIAL TECHNOLOGIES	PROCESS OPTIONS
GROUNDWATER	NO ACTION	NO ACTION	NO ACTION	NO ACTION
	PREVENT HUMAN CONTACT	INSTITUTIONAL ACTION	INSTITUTIONAL ACTION	DEED RESTRICTIONS
				LONG TERM MONITORING
	PREVENT MIGRATION OF CONTAMINATED GROUNDWATER	CONTAINMENT	VERTICAL BARRIERS	SHEET PILING
				SLURRY WALL
		COLLECTION	GROUNDWATER COLLECTION	SUBSURFACE COLLECTION TRENCHES
				WITHDRAWAL WELLS
		TREATMENT	OFF-SITE TREATMENT	POTW
				COMMERCIAL FACILITY
			ON-SITE TREATMENT	SITE-SPECIFIC PROCESS OPTIONS
SURFACE WATER	NO ACTION	NO ACTION	NO ACTION	NO ACTION
	PREVENT HUMAN CONTACT	INSTITUTIONAL ACTION	INSTITUTIONAL ACTION	DEED RESTRICTIONS
				LONG TERM MONITORING
	PREVENT OFFSITE WATER FROM ENTERING SITE	DIVERSION OF RUNON	DIVERSION	RESIDENT RELOCATION
				TRENCHES
				BERMS
	PREVENT ONSITE WATER FROM LEAVING SITE	DIVERT/COLLECT RUNOFF	COLLECTION	DRAINAGE DITCHES
			CONTROL OVERFLOW	BERMS/V-NOTCH WEIR

TABLE31.WK1

15-May-91

Table 5 (continued)

TECHNOLOGY SCREENING SUMMARY

ENVIRONMENTAL MEDIA	REMEDIAL ACTION OBJECTIVES	GENERAL RESPONSE ACTION	REMEDIAL TECHNOLOGIES	PROCESS OPTIONS
SEDIMENTS	NO ACTION	NO ACTION	NO ACTION	NO ACTION
	PREVENT HUMAN CONTACT	INSTITUTIONAL ACTION	INSTITUTIONAL ACTION	DEED RESTRICTIONS
				LONG TERM MONITORING
		CONTAINMENT	CELL CONSTRUCTION	DREDGE AND CONSTRUCT RCRA PART 360 CELL FOR SEDIMENT
	PREVENT MIGRATION OF CONTAMINANTS	DREDGING AND TREATMENT	PHYSICAL/CHEMICAL TREATMENT	SOIL WASHING
				CHEMICAL TREATMENT
				SOLIDIFICATION
			THERMAL TREATMENT	INCINERATION
		IN-SITU TREATMENT	PHYSICAL/CHEMICAL TREATMENT	IN-SITU CHEMICAL TREATMENT
				IN-SITU SOLIDIFICATION
				IN-SITU STABILIZATION
				IN-SITU VITRIFICATION
AIR	NO ACTION	NO ACTION	NO ACTION	NO ACTION
	PREVENT HUMAN CONTACT	INSTITUTIONAL ACTION	INSTITUTIONAL ACTION	DEED RESTRICTIONS
				LONG TERM MONITORING
				RESIDENT RELOCATION
	PREVENT INHALATION OF FUGITIVE DUST	CONTAINMENT	CAPPING	SEE PROCESS OPTIONS FOR SOIL/WASTE/FILL

TABLE 6

FRONTIER CHEMICAL - PENDLETON SITE
COST ESTIMATES FOR REMEDIAL ALTERNATIVES

ITEM	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3a	ALTERNATIVE 3b	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6
CAPITAL COSTS							
1. MSG CAP			$3,001,000	$3,001,000			
2. SOIL CAP					$1,594,000	$1,594,000	$1,594,000
3. EXCAVATION AND ON-SITE THERMAL DESORPTION (HOT SPOT)							$19,056,000
4. IN-SITU SOLIDIFICATION (HOT SPOT)						$13,727,000	
5. IN-SITU SOLIDIFICATION							$6,097,000
6. EX-SITU HOT SPOT SOLIDIFICATION					$5,124,000		
7. PHYSICAL CONTROLS			$178,000	$178,000	$178,000	$178,000	$178,000
8. SHEET PILING (ALL)			$2,321,000	$2,321,000			
9. SHEET PILING (LAKESIDE)					$389,000	$389,000	$389,000
10. SEDIMENT DREDGING			$691,000	$691,000	$691,000	$691,000	$691,000
11. SEDIMENT TREATMENT (EX-SITU SOLIDIFICATION)				$4,693,000	$4,693,000	$4,693,000	$4,693,000
12. LAKE CELL							$2,586,000
13. AIR EMISSIONS CONTROL			$297,000	$297,000	$699,000	$297,000	$699,000
14. GROUNDWATER COLLECTION			$477,000	$477,000			
15. GROUNDWATER TREATMENT			$1,410,000	$1,410,000	$1,410,000		$1,410,000
16. GROUNDWATER MONITORING WELLS		$42,000	$42,000	$42,000	$42,000	$42,000	$42,000
TOTAL CAPITAL COST	$0	$42,000	$8,417,000	$13,110,000	$14,820,000	$21,611,000	$37,435,000
OPERATIONS AND MAINTENANCE COSTS							
1. GROUNDWATER MONITORING		$68,000	$68,000	$68,000	$68,000	$68,000	$68,000
2. MSG CAP			$43,000	$43,000			
3. SOIL CAP					$43,000	$43,000	$43,000
4. GROUNDWATER TREATMENT - LONG TERM (30 YEARS)			$215,000	$215,000			
5. GROUNDWATER TREATMENT - TEMPORARY (2 YEARS)					$215,000		$215,000
TOTAL ANNUAL O & M COST	$0	$68,000	$326,000	$326,000	$326,000	$111,000	$326,000
PRESENT WORTH OF O & M COST (@ 10% PER YEAR FOR 30 YEARS)	$0	$642,000	$3,079,000	$3,079,000	$1,478,000	$1,048,000	$1,478,000
PRESENT WORTH OF TOTAL COST (CAPITAL PLUS O & M)	$0	$684,000	$11,496,000	$16,189,000	$16,298,000	$22,659,000	$38,913,000

QUARRY LAKE SEDIMENT STUDY
FRONTIER CHEMICAL - PENDLETON SITE
SITE NO. 932043
TOWN OF PENDLETON
NIAGARA COUNTY, NEW YORK

PREPARED BY:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
270 MICHIGAN AVE
BUFFALO, NEW YORK 14203

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APPENDICIES

1.0 INTRODUCTION

During the original remedial activities at the site, the Lake was dewatered and contaminated Lake Sediments were excavated to what was determined to be the native clay bottom. The sediments that were removed from the Lake were then interned within the area of the closed and capped landfill. Confirmatory samples of the final extent of sediment excavation were collected in numerous locations but the sample analysis was limited to only the full spectrum of EP Toxicity parameters. Contrary to current sampling protocols, analyses of potential contaminants by weight were not conducted and therefore no comparison of the total contaminant concentrations can be performed against established fish and wildlife or health based sediment guidance. While the Lake is currently within the boundaries of the listed superfund site, it is unfenced and is actively used by the local community for fishing and other recreational activities.

The purpose of this study was to collect a series of representative sediment samples and analyze them for the parameters shown in Table 1 to determine the quality of the sediment in the Lake. The data will then be used to compare to both Fish and Wildlife sediment criteria as well as evaluate for human exposure/contact. The ultimate goal would be to reclassify the Quarry Lake area by removing it from within the current site boundaries allowing Niagara County or the Town of Pendleton to acquire the site through the In-rem process and open it for unrestricted public use.

2.0 SITE HISTORY AND BACKGROUND

2.1 Site Description

The Frontier Chemical-Pendleton site is located on Townline Road in the Town of Pendleton, Niagara County, New York. The site is bounded by Townline Road to the west, an abandoned railroad right-of-way to the southeast and Bull Creek to the north. The area around the site is residential/agricultural. The nearest residences are located less than 100 feet from the site. Quarry Lake makes up approximately 15 acres of the current 22 acre site.

2.2 Site History

This site was used for the treatment of industrial wastes from 1959 to 1974. Discharges from these operations went into a property lake (Quarry Lake). Over 50 barrels containing pyridine were excavated and removed from site during 1984-85.Plating wastes, pickle liquors and other liquid acid wastes from plating and metal finishing industries were treated at the site, with residuals from the waste treatment process being discharged into Quarry Lake which occupies approximately 15 acres of the Site. Much of the former Process Area was filled and graded following termination of waste treatment operations.

Under Consent Orders issued in 1984, 1986, and 1988, Frontier Chemical was required to remediate Quarry Lake by draining and excavating the contaminated sediment and placing it in a containment area which was to be built on-site. In addition, Frontier was required to investigate suspected disposal areas to the southeast of the lake. Frontier Chemical installed 12 additional monitoring wells in 1988 as a part of the

investigation. Frontier Chemical did not implement and complete all the work as required by the Consent Orders and was found to be in violation of the orders. Consequently, the Department undertook the RI/FS which was completed in 1991. The RI determined that the bottom sediments of Quarry Lake were contaminated with heavy metals and the process/fill area south of the lake was contaminated with both organics and heavy metals.

The Record of Decision (ROD) was signed in March 1992. In March 1994, the PRP Group entered into an Order on Consent (#B9-0270-89-05) with NYSDEC to implement the RD/RA Work Plan. Site remediation consisted of removal of lake sediments and placement in an onsite landfill. The site remediation project was designed in 1993 and 1994, the construction was completed in 1995 and 1996 by Sevenson Environmental Services, Inc., and OM&M activities began in 1997.

In March 1997 the site was reclassified by the Department from a Class 2 to Class 4 site. During the classification process the boundaries of the original 77 acre site were revised to include only the capped area of the landfill and Quarry Lake which together encompass approximately 22 acres. While the landfill area remains fenced and is actively managed by the PRP group, there is no active management or site restrictions being maintained or required of the Quarry Lake area. As such the Lake area has become an active fishing and recreational area for local residents and youth.

3.0 SAMPLING METHODS

3.1 Sediments

Lake sediments were collected at the five locations shown in Figure 2. Three locations were chosen adjacent to the landfill area with the intention of detecting any contaminants that maybe leaching from the capped waste or being conveyed to the Lake via site run-off from the capped area. These three samples were also located in close proximity to the original confirmatory sample locations that were collected as part of the original remedial action. Two additional samples were also collected towards the center of the Lake where the depths were the deepest and sediment would be expected to accumulate.

The sampling locations were accessed using a small flat bottom row boat and were collected using a ponar dredge sampling device. The device was dropped from the water surface to the bottom of the lake where the jaws were closed and a bottom sample collected. Once the sediment was retrieved to the surface it was immediately placed in a clean stainless steel sampling bowl. Samples were then spooned from the bowl using disposal plastic scoops and placed in the appropriate sample jars, as determine and provided by the laboratory. Individual sample jars were then consolidated into a single storage bag and immediately packed on ice. Upon the completion of sampling the samples were transported to the laboratory for analysis. Standard chains of custody protocols were also followed.

During the sampling procedures notes were collected to document the time and location of each sample as well as the samples physical characteristics. A summary of this information is provided in Table 2. Sample Details.

4.0 ANALYTICAL RESULTS

4.1 Sediment Results

All sediments were analyzed for SVOCs, VOCs, Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Sliver, Metals Digestion, Pesticides, Herbicides, and TOC. The results of the analysis are discussed below and presented in Tables 3 to 5.

Total Organic Carbon (TOC) was analyzed using the standard Lloyd Kahn method and is required in order to calculate the sediment criteria guidance values. As shown in Table 3, the values of TOC ranged from a high of 63,700 mg/kg to a low of 17,400 mg/kg. As a result of the analysis a lower confidence value of 33,254 mg/kg or 3.3254 percent was used to calculate the sediment criteria guidance values for the organic parameters as shown in Table 4.

In general the analytical results showed only trace amounts of contamination in lake sediment with several results being flagged as being detected at less than the reporting limit or having also being detected in the blank samples.

As referenced in Table 5a. Only two volatile organic compounds were detected with 2-Butanone (MEK) being detected at a maximum concentration of 10 ug/kg in 4 of 5 samples and Acetone being detected at a maximum concentration of 52 ug/kg in 5 of 5 samples. There is no sediment criteria value for 2-Butanone, and the sediment criteria value for acetone was not exceeded for any of the samples.

Several typical urban PAHs were also detected at low concentrations during the analysis for SVOCs. These parameters consisted of: anthracene, benzo(a)anthracene,

benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, Dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene. Sample SED01, which is closer to Townline Road, showed the highest level of PAH concentration and larger number of parameters found in the samples, where the samples collected to the interior of the Lake or farther away from the Road showed generally lesser parameters and lower concentrations. The calculated Human Health Bioaccumulation values for benzo(b)fluoranthene, benzo(g,h,i)perylene, and chrysene were slightly exceeded in SED01 while benzo(b)fluoranthene, and chrysene were also slightly exceeded in SED02. No other SVOCs exceeded sediment criteria in any of the other samples.

During the herbicides/pesticides analysis only 4,4'-DDT was detected in 1 of the 5 samples. At sample location SED01, 4,4'-DDT was analyzed at a concentration of 6.6 ug/kg which exceeds the calculated Human Health Bioaccumulation value of 0.33 ug/kg. All other samples were non-detect for, 4,4'-DDT as well as any other herbicides/pesticides.

Table 5b presents a summary of detections for metals. Of the eight RCRA metals analyzed which consisted of: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, and Selenium, 7 were detected at low concentrations in the Lake sediment. When the results are compared to the lowest and severe effect guidance values, only cadmium exceeded the lowest effect value and no metals exceeded the severe effect values. For cadmium, two samples, SED01 and SED05 slightly exceeded the lowest effect value of 0.6 mg/kg at 0.78 mg/kg and 0.83 mg/kg respectively.

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 Conclusions

The results of the sampling study showed that the sediments of Quarry Lake contain only trace levels of contaminants and that of the parameters detected, only three compounds slightly exceed the calculated Human Health Bioaccumulation values. This study also confirms the results of the original confirmation sampling that was performed during the original remedial action conducted in 1998 that all contaminated sediment was removed from the Lake bottom and disposed of in the constructed landfill cell.

Based on the results of the study it is recommended that the boundaries of the site be amended so as to allow Niagara County and/or the Town of Pendleton to take ownership of the lake area during the acquisitions of the remainder of the former Frontier Chemical property that is outside the foot print of the current landfill area.

6.0 REFERENCES

- *ENGINEERING CERTIFICATION REPORT, Frontier Chemical -Pendleton Site, Town of Pendleton, Niagara County, New York, Volumes 1 and 2, Pendleton Site PRP Group*, By OBG Engineers, dated March 1997

- *Operation, Maintenance & Monitoring (OM&M) Manual, Frontier Chemical - Pendleton Site, 6844 Town Line Road, Town of Pendleton, Niagara County, New York, Site No. 932043, Pendleton Site PRP Group*, March 1997 - Partial Revision May 23, 2013

- *NYSDEC, Division of Fish and Wildlife, Division of Marine Resources, Technical Guidance for Screening Contaminated Sediment*, dated November 23, 1993, (reprinted July 1994, March 1998, January 1999)

- *DRAFT Screening and Assessment of Contaminated Sediment, NYSDEC, Division of Fish, Wildlife and Marine Resources, Bureau of Habitat* dated January 24, 2013

Figure 1

Site Location Map

QUARRY LAKE SEDIMENT STUDY

Frontier Chemical - Pendleton Site

Site No. 932043

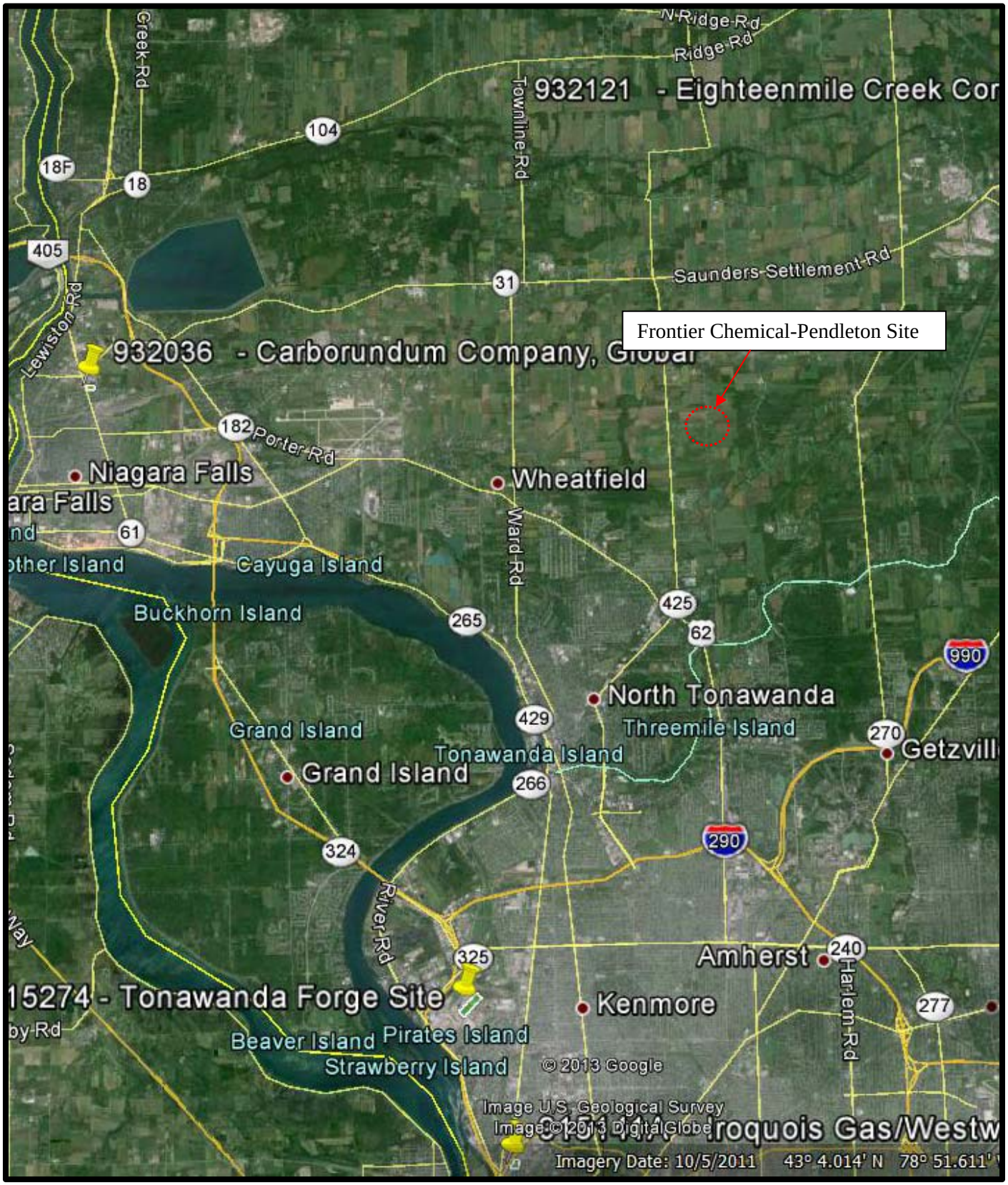

Figure 2

Current Site Boundaries

QUARRY LAKE SEDIMENT STUDY
Frontier Chemical - Pendleton Site
Site No. 932043

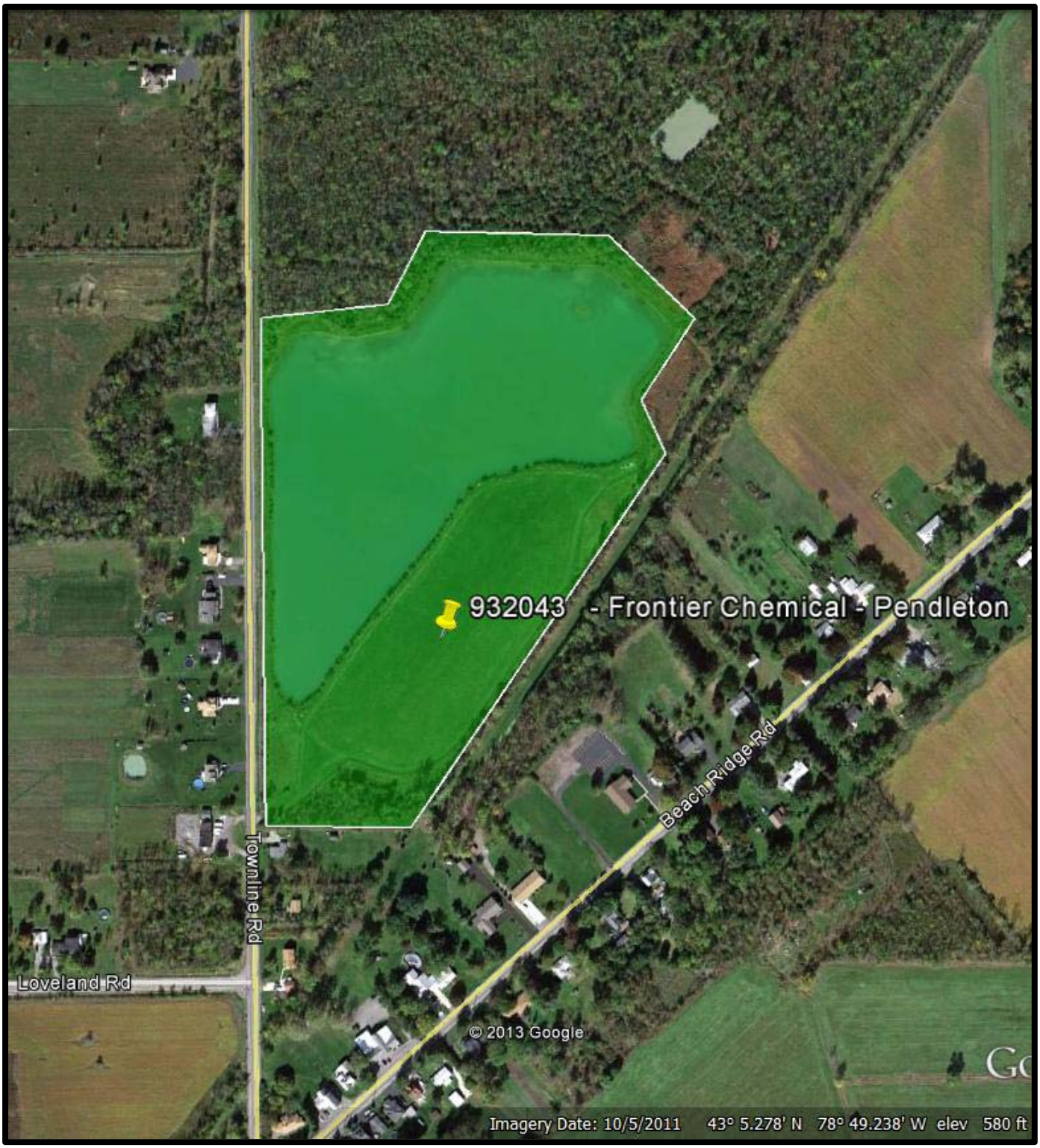

Figure 3

Sediment Sample Location Map

QUARRY LAKE SEDIMENT STUDY

Frontier Chemical - Pendleton Site

Site No. 932043

Table 1

SUMMARY OF ANALYTICAL TESTING PARAMETERS

QUARRY LAKE SEDIMENT STUDY

Frontier Chemical - Pendleton Site

Site No. 932043

Sample Media	Quantity	Analysis	EPA Method	DEC Contract No.
Sediment	5	SVOCs	8270	SS-08-D
		VOCs	8260	SS-07-D
		Arsenic	6010B	SS-20-D
		Barium	6010B	SS-21-D
		Cadmium	6010B	SS-24-D
		Chromium	6010B	SS-26-D
		Lead	6010B	SS-30-D
		Mercury	6010B	SS-33-D
		Selenium	6010B	SS-36-D
		Sliver	6010B	SS-37-D
		Metals Digestion	3000	SS-46-D
		Pesticides	8081	PA-07--D
		Herbicides	8151	SS-06-D
		TOC	Lloyd Kahn	NA
All Samples		Cat B Deliverables		TC-05

Table 2

SAMPLE DETAILS
QUARRY LAKE SEDIMENT STUDY
Frontier Chemical - Pendleton Site
Site No. 932043

Sample ID	Location		Date	Time (Hrs.)	Sample Description
	Lat.	Long.			
SED1	43 05.249	78 49.372	07/23/2013	1000	Light brown silty clay, no odor
SED2	43 05.312	78 49.290	07/23/2013	1145	Light brown silty clay, no odor
SED3	43 05.332	78 49.330	07/23/2013	1025	Surface material (~0 - 3") consisting of thin veins of a very fine silty black organic material within a light brown silty clay, A light brown silty clay was noted below, no odor noted
SED4	43 05.335	78 49.240	07/23/2013	1035	Light brown silty clay, no odor
SED5	43 05.336	78 49.235	07/23/2013	1100	Surface material consisted of a very fine silty black organic layer over light brown silty clay, no odor noted.

Table 3

TOTAL ORGANIC CARBON RESULTS

QUARRY LAKE SEDIMENT STUDY

Frontier Chemical - Pendleton Site

Site No. 932043

Sample Number	TOC (mg/kg)
SED01	51,000
SED02	55,700
SED03	59,900
SED04	17,400
SED05	63,700
Average:	**49,540**
Standard Deviation:	**18,580**
Count:	**5**
Confidence Limit (95%):	**16,286**
Upper Confidence:	**65,826**
Lower Confidence:	**33,254**

Bin Range	*Frequency*
0	0
20000	1
40000	0
60000	3
80000	1
100000	0
120000	0
140000	0
160000	0
180000	0
200000	0
More	0

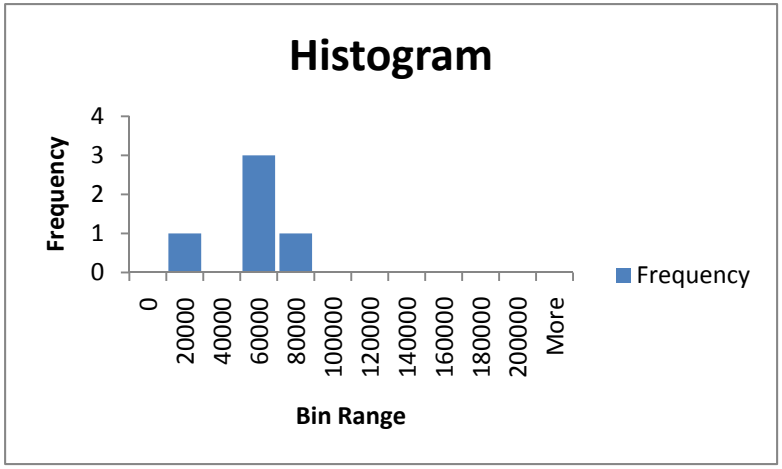

Table 4

SEDIMENT CRITERIA CALCULATIONS

QUARRY LAKE SEDIMENT STUDY

Frontier Chemical - Pendleton Site

Site No. 932043

Contaminant	Log Kow	Value Kow	% Carbon	Human Health			Benthic Aquatic Life		
				Bioaccumulation			Chronic Toxicity		
				Water Criteria µg/l	Sediment Criteria µg/gOC	Sediment Criteria µg/kg	Water Criteria µg/l	Sediment Criteria µg/gOC	Sediment Criteria µg/kg
VOCs									
2-Butanone (MEK)	1.48	30.2	3.3254	0.8	0.02	0.80			
Acetone	2.13	134.9	3.3254				210.0	28.0	931.1
SVOCs									
Anthracene	4.45	28,183.8	3.3254				3.8	107.10	3,561
Benzaldehyde									
Benzo(a)anthracene	5.61	407,380.3	3.3254				0.03	12.22	406.41
" "	6.04	1,096,478.2	3.3254	0.0012	1.32	43.75			
Benzo(a)pyrene	6.04	1,096,478.2	3.3254	0.0012	1.32	43.75			
Benzo(b)fluoranthene	6.04	1,096,478.2	3.3254	0.0012	1.32	43.75			
Benzo(g,h,i)perylene			3.3254						
Benzo(k)fluoranthene	6.04	1,096,478.2	3.3254	0.0012	1.32	43.75			
Chrysene	6.04	1,096,478.2	3.3254	0.0012	1.32	43.75			
Dibenzo(a,h)anthracene			3.3254						
Fluoranthene	5.19	154,881.7	3.3254					1,020	33,919
Indeno(1,2,3-cd)pyrene	6.04	1,096,478.2	3.3254	0.0012	1.32	43.75			
Phenanthrene	4.45	28,183.8	3.3254					120.0	3,990
Pyrene	5.32	208,929.6	3.3254				4.6	961.08	31,960
Pesticides/PCBs									
4,4'-DDD	6.0	1,000,000.0	3.3254	0.00001	0.01	0.33			

Table 5a

SUMMARY OF DETECTIONS - ORGANICS

QUARRY LAKE SEDIMENT STUDY

Frontier Chemical - Pendleton Site

Site No. 932043

Analyte	Units	Sediment Criteria Benthic Aquatic Life Chronic Toxicity or Human Health Bioaccumulation(a) (ug/kg) (1)	SED01		SED02		SED03		SED04		SED05	
			Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier	Result	Qualifier
2-Butanone (MEK)	ug/kg	NA	ND		8.9	J	9.6	J	2.8	J	10	J
Acetone	ug/kg	931.1	20	J	47		51		16	J	52	
Anthracene	ug/kg	3,561	9.4	J	ND		ND		ND		ND	
Benzaldehyde	ug/kg	NA	ND		ND		ND		ND		31	J
Benzo(a)anthracene	ug/kg	43.75 (a)	37	J	36	J	ND		ND		ND	
Benzo(a)pyrene	ug/kg	43.75 (a)	33	J B	31	J B	9.0	J B	ND		16	J B
Benzo(b)fluoranthene	ug/kg	43.75 (a)	64	J	49	J	26	J	ND		29	J
Benzo(g,h,i)perylene	ug/kg	43.75 (a)	49	J B	29	J B	17	J B	13	J B	16	J B
Benzo(k)fluoranthene	ug/kg	43.75 (a)	24	J	22	J	ND		ND		ND	
Chrysene	ug/kg	43.75 (a)	54	J	44	J	20	J	33	J	27	J
Dibenz(a,h)anthracene	ug/kg	NA	15	J	11	J	ND		ND		9.9	J
Fluoranthene	ug/kg	33,919	72	J	54	J	28	J	12	J	37	J
Indeno(1,2,3-cd)pyrene	ug/kg	43.75 (a)	38	J B	26	J B	ND		ND		14	J B
Phenanthrene	ug/kg	3,900	38	J	15	J	14	J	12	J	18	J
Pyrene	ug/kg	31,960	57	J B	41	J B	22	J B	ND		29	J B
4,4'-DDT	ug/kg	0.33	6.6	J	ND		ND		ND		ND	
Moisture	%	NA	48		40		36		33		34	
Solids	%	NA	52		60		64		67		66	

(a) Guidance value represented is Human Health Bioaccumulation value

J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

B - Compound was found in the blank and sample.

(1) Assumes a TOC value of 3%

SHADED - Exceeds Sediment Criteria

Table 5b

SUMMARY OF DETECTIONS - METALS

QUARRY LAKE SEDIMENT STUDY
Frontier Chemical - Pendleton Site
Site No. 932043

		DFW Guidance		SED01	SED02	SED03	SED04	SED05					
Analyte	**Units**	**Lowest Effect**	**Severe Effect**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**	**Result**	**Qualifier**
Arsenic	mg/kg	6.0 (P)	33.0 (P)	5.2		3.7		3.4		4.2		2.9	J
Barium	mg/kg	NA	NA	105		104		93.3		121		83.0	
Cadmium	mg/kg	0.6 (P)	9.0 (L)	0.78		0.45		0.83		0.56		0.46	
Chromium	mg/kg	26.0 (P)	110.0 (P)	22.6		21.4		22.9		23.1		18.9	
Lead	mg/kg	31.0 (P)	110.0 (L)	11.3		9.7		8.8		9.2		8.2	
Mercury	mg/kg	0.15 (L)	1.3 (L)	ND		ND		0.012	J	ND		ND	
Selenium	mg/kg	NA	NA	0.90	J	ND		ND		1.1	J	0.014	J

"L" - following a criterion means that it was taken from Long and Morgan (1990);
"P" - following a criterion indicates that it is from Persaud et al. (1992).

J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
NA - Not Applicable - No standards for this parameter

SHADED - Exceeds Lowest Effect Value
BOLD - Exceeds Severe Effect Value